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HISTORICAL SKETCH

OF

LOGIC,

FROM THE EARLIEST TIMES TO THE PRESENT DAY.

BY

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PREFACE.

THE following historical sketch of logical science has been written under a conviction, that some such work was needed, both by the general philosophical reader and the student of logic. The theories of reasoning are so numerous, and so diversified in their principles and practical aim, that some general outline of their external history seems, from the antiquity, and acknowledged importance of logical speculations, both called for, and desirable in itself. There is not, so far as I know, any work of this kind in the English language; and the two or three treatises I have met with of a foreign origin, possessing a historical character, have been so brief and limited in their range, that I have not been able to derive much assistance or benefit from them.

It has been my constant aim to keep the general principles of the different logical systems I have noticed distinctly before the reader's attention, and to make the historical outline as fruitful as possible of solid and useful information; valuable especially to those who may be undergoing a course of logical tuition. How far I have succeeded in effecting this object, it does not rest with me to determine.

It has often, in the preparation of this work, been a source of regret, that the limited space I have had allotted to me, prevented me from giving such an extended notice of particular and interesting logical questions as I thought desirable; but brevity was unavoidable where the number of systems and authors so far outstripped the time and means at my disposal. Indeed, five or six such volumes as the present would have been scarcely adequate to do any thing like ample justice to a subject of such great magnitude and diversity of materials. My shortcomings, both in this and in other respects, I am conscious, are numerous and weighty; but if I have, in the humblest degree, succeeded in

barely planting, here and there, a few useful finger-posts to such logical historians as may afterwards follow the same route, I shall feel proud of the achievement, and fully satisfied with the reward it will carry with it.

It was my original intention to enter more fully than I have done into the history of what is called formal logic ; but I soon found that this would extend the work much beyond what was convenient ; and not only so, but that I would infallibly be led into a complete labyrinth of matters of detail, which are comparatively very uninteresting in themselves, whilst the fundamental questions relative to the nature and offices of logic itself are as yet undetermined, and held in abeyance. It is, therefore, chiefly to the philosophical aspect of the science that the contents of this volume refer. I hope, however, to be able, in a short time, to give some account of this technical and formal division of logic, so far as it is connected with the general science of reasoning itself.

BELFAST, *January* 1, 1851.

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INTRODUCTION.

IT may confidently be asserted, that there is no department of human speculation and inquiry in which so many contradictory opinions are entertained as in the science or art of logic. For the last five-and-twenty centuries, system has followed system in rapid succession ; and one generation of logicians after another have been chiefly occupied in refuting or modifying the principles, and correcting the mistatements of their predecessors. No sooner has a particular logical system obtained a footing in some locality in the republic of letters, and become incorporated with the general routine of philosophical education, than some aspiring and ambitious speculator has called in question its fundamental principles, or subjected its practical rules to supervision and amendment. From Zeno to modern times, every theoretical logician has flattered himself in his day that he had placed logic on a firm basis—not to be disturbed as long as the world lasted. He has flattered himself with the idea, that it was his fortunate lot to chase from the science every vestige of doubt, to reconcile every real and apparent contradiction, and to make, to all future generations,

the path of knowledge and science indisputably plain, and of ready and agreeable access.

And the same spirit animates the philosophical logician of the present hour in every direction where his science is known and cultivated. Every speculator has a system of his own with which strangers do not intermeddle. He is the sole champion of his own theory, and the herald of his own fame. He, too, labours under the cheering anticipation that he is putting the finishing stroke to the science, and silencing for ever, throughout the philosophic world, the voice of doubt and contention. Though he may have all the learning of the East, and all the talent of Christendom centred in his own person, yet he knows full well that, apart from his own professorial chair or private study, he will not find a single cultivator of the same science entirely agreeing with him, either on the fundamental principles of logical philosophy, or on the best modes of applying them. But this does not discourage him, nor ruffle the equable current of his self-complacency. He has the advantage over those who have gone before him, hoping unto death the same thing as himself; inasmuch as he reasons that, if there *ever* is to be a time when the principles of his science are to be known and unalterably fixed, he may be the fortunate instrument in this grand and noble achievement. While there is life there is hope; and this consideration is sufficient to sustain him in his labours, amidst the mass of disappointment that lies behind him.

The speculative aspects under which logic has appeared in different ages and countries, have not been more checkered and varied than its external fortunes.

It has at one time revelled in unbounded authority and power, and yet at another been doomed to the bitter humiliation of abject servitude and dependence. It has been the petted child of courts and monarchs, and yet been reviled by the beggar in the street. It was once the art of arts, the science of sciences, and the proudest emblem in the escutcheon of the philosopher. The warrior ventured not to battle without it, nor could the lawyer on the bench, or the theologian in the pulpit, acquit himself with grace unless versed in its canons and rules. Notwithstanding, however, all this power and grandeur, we have witnessed the science scouted from many influential universities; and, where admitted, it was only on the condition of becoming a humble menial and a willing slave.

In spite, however, of all such reverses, fluctuations, and uncertainties, logic has within it a vigorous principle of vitality. Like the phoenix, it is continually rising from its own ashes. It never allows mankind to wander far nor long, without pressing its claims and obtruding its counsels and admonitions upon them. It must, therefore, have a permanent hold of our sympathies, some fixed root in our nature, or it would have been obliterated long ago from the book of knowledge. Astrology and Alchymy never tantalized human reason so severely. For what can present a greater anomaly to the understanding, than that logic—calling itself a science; having chairs in universities set apart for its especial cultivation; witnessing its professors taking the first rank among the acute and profound of our race; and pointing, with exulting pride, to more than a thousand distinct treatises on the subject which have

emanated from their pens within the last three hundred years; that logic, we say, should, under these circumstances, not be able to furnish two logicians of any country, who can agree in any one common principle of this science, nor be able to state to what particular or general uses it can be applied; must present to the candid mind one of the most striking phenomena in the entire range of human thought. Can any subject, in the whole circle of the sciences, present such a lack of unanimity, or a more cheerless and desponding aspect? The use of the word logic is almost the only thing which disputants have in common: if we venture a step beyond this, and ask for a definition of what is implied in it, we are instantly stunned with a thousand discordant voices from all parts of the world.

Reverting again to the acknowledged vitality of logical speculations, there must be some adequate and powerful cause for it in the nature and constitution of things. There must be something to which such speculations invariably point, not always possessed, but which has something obvious about it, though difficult to lay hold of and secure. The opposing or antagonistic forces which obstruct our readily seizing the leading truths of logical science, and making them obvious to the understanding of others, must be the result of some settled law of nature, or some extensive range of human feelings and sympathies, which the principles and forms of civil society foster and sustain. Let us then examine, in a sober and serious frame of mind, into the number and nature of these opposing forces, with a view of throwing, if we can, some little light on the great question, Why is it that logic presents such an assem-

blage of discordant and contradictory opinions and principles?

In the first place, then, logic, whether of a philosophical or formal caste, is involved in the common difficulties of all questions connected with, or springing out of, mental philosophy. Logic, or the science or art of reasoning, is expressive of, and embodies, a purely intellectual act. This is one of the sources of the haziness which encircles its operations and causes. Every logician must be, to some extent, a metaphysician also; he deals with mental causes and effects. He must learn the difficult art of looking into his own mind, and scanning, with more or less comprehension and precision, its varied powers and faculties. This is a matter of paramount perplexity to many men; and to men, too, of even average learning and ability. Here is an obstacle at the first step. The truth soon flashes across the mind of every inquirer, that the noblest part of his being—his intellectual frame—must ever remain partially and imperfectly known. This conviction shakes the confidence of his own judgment, and imparts a doubting spirit to every thing connected with the reflection on his own mind. His examinations and inquiries are personal, and cannot be visibly portrayed or communicated to others. The mode of investigating the world *within*, is not the same as that which we use for investigating the world *without*; and, if we attempt to employ the one mode instead of the other, we shall miserably fail in our object. The tablet of the mind is not like a chess-board, where the unfinished game may be taken up at the point where the last player left it; for the movements of thought are complicated and subtile, and our

trains of ideas seldom remain fixed or visible to consciousness for any length of time. The lamp of our internal knowledge is for ever passing onwards, and we can only now and then arrest its course, and benefit a little from its light. Every man has to commence a new plan of instruction for himself, and is compelled to leave it in turn, as a broken thread, to whoever comes after him.

Logic being, then, expressive of an intellectual act or operation, it is involved in all that doubt and misconception which appertain to descriptions of mental phenomena generally; but the science of reasoning, viewed in another light, and in connexion with mind, naturally gives rise to the chief portion of that difference of opinion and judgment so visibly impressed on its past history and present condition. Logic is a science or art hewn or cut out of the mind; out, as it were, of its very centre, or out of the vital part of its organization. This is a prolific source of disputes, and of divers opposite systems. The question is, how much mentality shall we portion out to the reason, or how little? Some thinkers consider reason, or reasoning, as the entire mental individual — an embodiment of the whole intellectual apparatus; others, again, limit it to a small fraction of the mind. The question becomes an open and undecided one. The logician and metaphysician are brought into collision. They differ about the boundaries of their respective sciences. The one lays claim to the whole of the domain; while the other is incapable of fixing on the precise portion of it which he wants for his own special purposes. The formal logicians, for example, say, We only want three items; a

subject, a copula, and a predicate, and with these we can frame a proposition, and present it under various points of view ; with these, in fact, we can display an act of reasoning in all its logical purity and comprehension. This is the only solid and philosophical foundation of logical science. Their opponents, however, remind them that there are more mental phenomena involved in the subject, the copula, and the predicate, and in their formal arrangement into distinct propositions, than what are commonly thought of. If, say the opponents of the strictly formal school, you profess to give an accurate analysis of an act of reasoning, it should be a full and complete analysis ; and if this be given, the result will be, that the regular syllogism will be shewn to embody the distinct co-operation and exercise of a much greater number of mental powers than the formal theory embraces. In the development of every syllogistic process, we recognise the operation of the powers of perception, memory, attention, abstraction, comparison, judgment, and even others ; and in every analysis of such a process of reasoning, it is incumbent we should not only take into consideration all these separate and independent faculties, but also portion out to each its individual share in the general result. Until this is done, there is no full or true analysis of the reasoning faculty. A partial or one-sided analysis is of no use. If logic be solely confined to the development of the *laws of thought*, considered as thought, it is indispensably requisite that *all those laws* should be brought out to open day, and admitted as necessary and recognised phenomena in the syllogistic process. Besides, say the anti-formalists, we would like to see a logician's

warrant for confining the province of logic within the strict boundary of merely considering the *laws of thought* as thought? Where is his authority for so doing? Can he back it by historical evidence, ancient and modern? Nay, we go beyond even this in our demands; we require, in conjunction with the authority of historical logic, the philosophical reasons—the regular and formal canons of science—why such and such a thing should be considered as logic rather than any thing else. Let these reasonable conditions be complied with, and then the great question at issue will be in a fair way for a satisfactory solution. For any logician to say that this, and nothing else but this, is pure logic, amounts to nothing. We must have the scientific proofs for the validity of the statement, or it must be comparatively valueless.

On the other hand, again, it is argued, that there must be a line drawn between logic and metaphysics, to preserve the independence of each. When we once admit the consideration of psychological phenomena, and the laws and mutual dependence of the separate powers of the mind, to constitute a determined portion of logic, we, in fact, at once open the door to a vast mass of knowledge, which can be of no use whatever as an element in logical tuition; but, on the contrary, must tend to obstruct every rational and salutary application of its rules to the understandings of men. We are not to consider here what is theoretically sound, but what is practically possible. Besides, by limiting the definition and offices of logical science to the perception of truth, arising from the consideration of the *laws of thought*, as thought, we really and virtually do all that is pos-

sible, from the necessities of the case. To go beyond this, we must either take *all* objects of human inquiry, and decide on their truth or falsehood, or only *some* of them. To adopt the first plan is obviously impossible, and to adopt the latter is to make a selection upon no settled or rational principle. The only alternative which is left is, to confine logic strictly to thought, as an act of thinking, and to pass by the particular objects about which the mind thinks.

This is substantially the true position in which the question as to the real objects of logic has been left by the two great rival parties who have taken a distinguished interest in logical discussions from the earliest times to the present hour. The question always arises, How much of the mind shall be appropriated to logic? The entire history of the science of reasoning, when viewed from a purely intellectual position, is nothing but a practical and running commentary on this question. This has been made the chief point of dispute among all the leading philosophical logicians of every age and country; and the numerous and diversified solutions given of it are conspicuously portrayed in the historical annals of the science.

This, then, is one of the great obstacles in the way of mankind arriving at any thing like a general conclusion as to the limits of logical science. There seems to be no avoiding the difficulty, unless by making the matter in dispute an object of compromise and arrangement. There has been hitherto, and there must always be, mutual concessions among all logicians, from the sheer necessities of their position relative to the subject-matter with which they have to deal.

There are, however, other impediments in the way of unanimity as to the principles and modes of teaching logic, arising from causes of a different and more external character than those to which we have just briefly alluded. These obstructions have their principal seat in the influence, direct and indirect, which other departments of human knowledge exercise over logical speculations and systems. Logic has never been studied and taught as an independent science. It has no absolute domain of its own over which to range. In all ages it has professed to deal with *truth*, whether properly or not we need not stop at the present moment to inquire. Suffice it to say for our present purpose, that its abstract as well as practical aim has been to deal with, touch upon, regulate, and establish the canons of truth in some general or modified shape or fashion. Now, what is truth? A word confessedly of vast import,—embracing, in fact, all that is intellectual, and all that is materially interesting to man—all that is abstract, and all that is practical. It has the heart as well as the head for its basis or foundation. It embodies, in reality, the entire mass of human knowledge, human happiness, and human prospects.

Truth, then, though it has to do with every thing, has not to do with every thing in the same mode and fashion. Truth implies existence, but to mankind it implies much more. It is true that there are trees and houses around me where I now write; but this truth has no hold of my personality—it is a matter of no concern to me—it conveys neither anxiety, pain, nor pleasure. The truths, for example, of astronomy are highly sublime and interesting, because they can

be applied to practical purposes in guiding the mariner's frail bark in the trackless ocean, and as being in themselves powerful incentives for elevating the mind to Him by whom the entire universe is maintained; but take away these immediate and personal effects from astronomical truths, and the whole science would, in fact, be no science at all. And the same thing may be affirmed of every other branch of knowledge. Science of every kind has our internal nature for its basis. Even the abstract truths of mathematics can only be viewed as things having a bare intellectual existence, and can be designated and considered as truths only by virtue of the reflex influence of other principles of a mental and spiritual cast. There is absolutely neither wisdom nor folly where the voice of humanity is not heard.

Such, then, being the nature of truth, with the mysteries of an eternity in the background, we have to inquire how logic, which pretends to have something to do with it, comes to be invested with a peculiar interest, and to be moulded in its character and application by the prevailing influence of other branches of knowledge? Here a vast field of inquiry presents itself, which it is impossible for us at present to travel over; but we shall glance at two or three of the most prominent objects in the mental landscape, which may possibly throw some light on the question we have ventured to discuss.

We have a very striking illustration in the writings of the scholastic logicians, and, indeed, from almost every class of writers on mental subjects up to a very recent period of history, of this peculiar mode of appre-

hending the nature and offices of all philosophic truth. This is exemplified in the discussions on the nature of *being*. Every one who has looked into the books of logic and metaphysics of the middle ages, must have recognised the importance attached to this abstract notion of existence. The grand end, however, which it is made to serve as a philosophical instrument of reasoning, is to impart to the mind a right conception of the design of all human knowledge. This *being* is made to consist of two elements; namely, *goodness* and *truth*. These are its inherent attributes, and they are made the medium of connecting all human investigations with the vital interests of mankind,—that which is good, and that which is true. The entire scope of the discussions springing out of the consideration of this general idea of *being*, and which have a direct bearing on all science whatever, is, to enforce the conviction on the mind, that all true knowledge must have for its ultimate object the permanent happiness and improvement of mankind; but that these cannot be attained by limiting our views to merely temporal or material expedients.

In the first place, logical systems have uniformly been discussed through the medium of metaphysical theories. Whatever opinions a logician might have on the abstract nature of mind, or on the number and specific character of its separate powers or faculties, these opinions were sure to influence him in his investigations into the reasoning process. There must be a harmony maintained in his general creed at any price. This is strikingly exemplified in the entire history of logical philosophy, from its first dawn in Greece to the

present hour. In every age, the mental theories being given, we can determine with scrupulous precision the general phases of logical speculations. And so pointedly is this the case, that all the general terms of classification commonly used to designate theories of the mind, may be applied with the same force and exactness to systems of logic. We have the material, the rationalistic, the eclectic, the transcendental, the theological, the mystical, the sensational, and the common sense theories of logical truth or science, in the same way as we have corresponding theories of mental philosophy and speculation comprehended under these several terms.

And not only is this the case, that logic is greatly and directly influenced by the current doctrines of mental science, but it is also greatly modified and checkered, in its outward arrangements and rules, by the prevailing sentiments and opinions of philosophers on particular questions of metaphysical knowledge. Witness, for example, the unsatisfactory state in which theories of mathematical evidence, of induction, of Nominalism and Realism, are at the present moment placed. Nothing can be more opposite and conflicting than the judgments of the philosophers of Europe, at the present moment, on these perplexing, though highly interesting points. Yet all these distinct questions are so closely blended with systems of logic—theoretical, practical, and formal—that no ground can be occupied by any speculator promulgating doctrines on the nature of general reasoning, free from their actual intrusion and influence. These questions lie at the very threshold of logical investigations, and must be disposed of in some

fashion or other before the logician is allowed to take a single step in his inquiries.

Independently of this obstacle from mental philosophy itself, we have still other more direct and powerful influences to contend against, in reference to the unity of logical doctrines and tuition. Antagonistic forces of an external character meet us at every turn. Logic having, or professing to have, to do with truth, the watchfulness and jealousy of men are called into a state of activity, whenever the truth of *particular* departments of knowledge is conceived to be in jeopardy, or likely to be affected in any way or degree. All the interesting and moving questions which engross the feelings and sympathies of the mass of mankind in every country, and which are connected with, or grow out of, the sciences of theology, morals, and politics, have a direct reflex effect upon both the theory and practical application of logical science. It forms an item of secular interest and calculation to the temporal powers of the world, which is never lost sight of. The theologian, the moralist, and the legislator, keep a watchful eye over the use of an instrument which professes to deal with every department of scientific evidence or proof, with every speculative form of thought, and with the application of knowledge to the everyday interests and necessities of human life.

True, the influence of logical systems is not viewed with the same degree of suspicion in all departments of human inquiry. The mathematical and physical sciences, for example, seem removed from any direct logical control. The ingenuity of man may exercise itself here in comparative independence and liberty ;

and, with some trifling qualifications, he may adopt any theory he pleases. With purely objective knowledge, logic does not come in hostile contact. It is only in the mental and spiritual element that its conflict lies. The moment we pass the boundaries which separate the outer world of matter from the inner world of thought, we tread upon debatable ground, and excite the feelings of human nature in such a way and degree, as they are never seen to be excited in the ordinary philosophical investigations carried on in the pure and physical sciences.

The weighty influence which is thus brought to bear on logical studies, by particular branches of knowledge, arises from the intimate union subsisting between them and the faculty of reasoning generally. Theology, for example, has, in many epochs of her history, imparted the highest degree of interest to logical doctrines, and inspired a reverence and enthusiasm for their cultivation among great masses of people. On the other hand, again, theology often stands in awe of logic, and views all its modes of tuition with jealousy and apprehension. The reason for these opposite states of feeling in religious communities is, that the logical or reasoning powers have a peculiar and powerful influence over the theological element, and may be made to agitate vital and momentous questions to a serious extent. It is the established policy of Christian nations to prevent such occurrences. The action and reaction of theology and logic is strikingly observable in every period of history; and the mutual sympathy between them, even at this hour, is as active and influential as ever.

If mankind could be brought to think unanimously on all the fundamental principles of theology, morals, and politics, there would be then some chance likewise for logical unanimity ; but as this is not likely to happen, there must always be great differences of opinion on the principles which should constitute a science of argumentation. Long-established institutions and modes of thinking are always chary of speculative innovations ; for, unless some palpable and immediate advantage presents itself as an infallible result of change, the public mind keeps in the old channels of inquiry and knowledge in which it has been so long accustomed to move, regardless of the bold pretensions of startling novelties.

Logic must, then, I conceive, be doomed to present for ever a variable aspect—to be a system not united or bound together by a series of scientific axioms, susceptible of independent and demonstrative proof, and backed by a rigid and unvarying consequentiality ; but rather as constituting a code of rules and judgments, gathered from individual observation in every walk of science, and from every position in which the human mind is placed—partaking, moreover, largely of a prudential and precautionary character. And this has been, in fact, the true form logic has been compelled to assume, particularly within the last three centuries, purely from the necessity of accommodating itself to the progressive and extended range of philosophic thought, and to the constant desire manifested, that all knowledge should be tested by its susceptibility of promoting the moral, religious, and intellectual improvement of individuals and societies. No scientific

truth becomes important unless it be productive of practical and beneficial results. The necessities of human existence require this rule to be rigidly enforced at all times, and under all circumstances. Men are led, by a profound and instinctive feeling, to separate the valuable from the unimportant. Between what is abstractly true and conceivable, and what is possible and useful, there is often a wide and impassable chasm, which no mere subtilty of mind can either bridge over or fill up.

And when we come to look at logical treatises, even of the most formal and technical character and pretensions, we recognise in reality the presence of the same class of rules, of a provisional and precautionary form, which constitute the staple articles of other logical works of a looser and more unscientific texture. The difference between formal and philosophical or popular logic is not so great as at first sight appears. There is little or no difference in principle; and the difference in matters of arrangement and detail resolves itself simply into a question, how far some logicians will go in a given direction, or at what point they are determined to stop? Both parties are proceeding on the same track; but the one is bent on taking a more lengthened journey than the other. And this will appear obvious if we look at the position of both classes of reasoners. The general doctrines which form a part of every formal system of logic—such as definition, analysis, method, and the like—are all grounded on mere rules of expediency; and are, in short, plastic and flexible adaptations of the judgment to some leading, though ill-defined, conception of the mind or under-

standing. They have, in fact, no scientific basis whatever. No writer on logic, from the earliest times to the present day, has ever succeeded in framing a rule on the definition of things and terms, through which, to use a common phrase, one might not drive a coach and six. And what logician has ever given a rule to limit the analytical process, to teach us when to separate or divide no further? Every writer on the subject makes analysis consist of a greater or less number of general rules, dependent for their validity on the kind or order of things analysed; the purposes for which such an analysis is required; and, at the same time, enforcing precautionary maxims for its right and successful application. And these remarks are substantially applicable to logical methods, and to all that has ever, up to this moment, been written about them. Where shall we look for a single rule or maxim on method, which is not purely a conventional and shifting thing, applicable in one case, and of no use in another? So that, viewing the differences between the logical formalists, and the philosophical and common sense school of logicians, it is obvious that both parties are doing the same thing, varied only by the different terms, and the technical phraseology employed to express each other's designs and purposes.

HISTORICAL SKETCH OF LOGIC.

CHAPTER I.

THE PYTHAGOREANS, ZENO, ETC., 500-400 B.C.

THE science of *reasoning*, considered under two distinct aspects—namely, as a *science*, and as an *art*—must have been coeval with the first ages of literature in every country. The social position and wants of men—the regular development of the laws of thought—and the various ideas and principles on which the moral judgments and opinions of mankind rest, must have exercised a direct and powerful influence over all those mental operations which form the constituent elements of ratiocination. There never was, nor ever could be, a time in the history of any people, in which reasoning, as a distinct mental section of education and philosophical instruction, was not, in some degree or measure, known and cultivated. The only difference which we can trace between a learned and polite, and

an ignorant and unpolished, people is, a difference of degree only; a more refined and extended range of the mind is manifested in the former case than in that of the latter. Both carry on, by certain given rules, processes of argumentation, partly from the natural spontaneity or fecundity of the mind itself, and partly for the more effective discharge of the duties and purposes of human existence.

It is, however, both interesting and important to trace, along the course of ages, what were the peculiar stages of advancement and perfection which mark the movements of thought in the ratiocinative intercourse of men; and how far, and in what manner, the general stock of knowledge which any nation at a particular epoch possessed, tended, directly or indirectly, to the cultivation and dissemination of truth. We clearly perceive, that at certain periods of history, and of periods too of long duration, the reasoning powers of men — taking these powers in their most comprehensive development — were more prominently and directly cultivated, and brought to a higher pitch of perfection, than at others. When there happened to be any thing in the social, political, or intellectual history of a people, which chilled for a time their mental ardour, contracted their sphere of knowledge generally, or led them to give an undue preference to some of the other departments of human learning or speculation, then the reasoning powers seem to have fallen into a state of comparative inaction or collapse. On the other hand, we can distinctly perceive, that when the mind of a nation was energetically excited, and subjects of intense interest engrossed their atten-

tion, then a new and vigorous impulse was given to argumentative talent, and the reasoning man appears in all his native vigour and power. To trace out these intellectual movements, then, and to mark the leading incidents and circumstances with which they were occasionally or commonly associated, is, I conceive, a legitimate topic of discussion to the mental philosopher and logician.

We shall commence, then, with a few remarks on the science of reasoning, or the art of logic, as it was developed and cultivated in Greece, where philosophy was known, in all its various aspects, at a comparatively early date.

It may here be premised, that one of the chief causes which gave birth to and cherished the dialectic or logical science in Greece, was the peculiar condition inseparable from its laws and institutions. These generated argumentative talents, both in writing and in speaking. As the democratic element appeared in vigorous action in the fifth century B.C., there was a direct incentive manifested to the cultivation of those mental powers more immediately and directly connected with the reasoning faculties of man. To cultivate the power of persuasion—to defend the interests of the commonwealth, or the opinions of a party, or the reputation or life of an individual—was an interesting and important duty, which no true citizen could altogether neglect. Patriotism glowed in the breast of every active member of the community. The whole intellectual energies of man were directed into civil and political channels. To protect the state, a friend, or himself, was a duty which every person who aimed

at any thing like an intelligent position in society, might in a moment be called upon to discharge. To be prepared for this became therefore a necessary accomplishment, and often an indispensable piece of precautionary policy, in all those who felt an interest, and took any part in, the civil and political movements of the day. Facility in speech, argumentative dexterity, correct and prompt classifications, and a readiness in marshalling all the intellectual powers and appliances to a given point, became objects of emulation and ambitious rivalry. Success here led the way to influence and renown; though not unfrequently, from the fierceness of party strife, consequences the most disastrous ensued, both to the state and to some of its most distinguished citizens.

The philosophic spirit was also a conspicuous element in Grecian dialectics. It was both a cause and an effect; sometimes stimulating to prominent logical manifestations, and at other times repressing and holding them in check. We see this strikingly exemplified in the history of various philosophic sects in Greece. The first decided and marked speculative impulse which the science of argumentation received in this country, was from the Pythagoreans. They came forward as cosmogonists. They embraced the totality of all things, physical and spiritual. The philosophic problems they sought to solve were of the most profound and gigantic character. What is the animating and creative principle of every thing we see? What are the ultimate atoms of all things which are made? Why is change effected, and what is it in itself? What is composition and decomposition, and

to what do they ultimately lead? These, and many similar questions, were the constant burden of their logical disquisitions and dialectic warfare. They sought, through these abstruse questions, to classify and arrange the entire objects of knowledge and of the mind's perception, and to develop the forms and rules which the logic of uninstructed nature imparts to them. They called into their aid other ideal appliances, such as numbers, mathematical ideas, and musical harmonies. It was maintained, that all mental operations, and matters constituting what was termed truth, were grounded on certain relations or combinations of numbers and harmony. The entire reasoning powers of man constitute, in fact, a harmonical development.*

ZENO of Elea (460–440 B.C.) is commonly considered as the first philosopher who really gave birth to the regular dialectic science. He had studied philosophy under Parmenides of Elea, a sage of great renown in his day. This Parmenides published a work “On Nature,” several fragments of which have come down to us, wherein he lays down certain abstract principles relative to all philosophic truth, and the rules and forms of communicating it. These are treated of under the heads of *opinion* and *certainly*. Zeno shewed himself a great logician. All his reasonings proceeded from certain general principles; and Aristotle considers him as the inventor of the art of dialectics. He carried the form of the dialogue to a great extent; so much so, indeed, as to lay himself

* Stob. Eccles. 1. Diog. Laert., 1. 8.

under the imputation of employing his reasonings in this form, more for the purpose of sophistication and bewilderment, than for the discovery and promulgation of truth itself. The peculiar nature of the abstract principles which lay at the root of his logical system, was calculated to foster this idea. These rested on his hypothesis of multiplicity, wherein each individual was, first, both similar and dissimilar to itself; secondly, both one and many; and thirdly, as at rest, and yet in motion. These opinions he endeavoured to illustrate and develop by certain perplexed and attenuated reasonings on space and quantity.*

Zeno published a treatise to illustrate all these recondite points of his theory, and even held public discussions on them before large assemblies of people, among whom were some of the most celebrated thinkers of the day. That he produced a powerful impression on the philosophic mind by his energetic and indomitable spirit of controversy, is affirmed both by Plato and Aristotle. It is said that he visited Athens, and gave logical instructions, for considerable sums of money, to some eminent Athenian citizens. It is also maintained, that he conversed with both Pericles and Socrates; the latter of whom being, at that time, just bursting into manhood.

On Zeno's merits, as an expounder of logical principles and methods, Mr Grote, in his "History of Greece," makes the following judicious and pertinent remarks:—"His appearance constitutes a remarkable era in Grecian philosophy, because he first brought out the extraordinary aggressive or negative force of the

* Diog. Laert., 1 8. Lect. Emp., 8-7. Arist. Top. 1. 8.

dialectic method. In this discussion respecting the one and the many, positive grounds on either side were alike scanty; each party had to set forth the contradictions deducible from the opposite hypothesis, and Zeno professed to shew, that those of his opponents were the more flagrant. We thus see, that along with the methodized question and answer, or dialectic method, employed from henceforward more and more in philosophical inquiries, comes out at the same time the negative tendency—the probing, testing, and scrutinizing force of Grecian speculation. The negative side of Grecian speculation stands quite as prominently marked, and occupies as large a measure of the intellectual force of their philosophers as the positive side. It is not simply to arrive at a conclusion, sustained by a certain measure of plausible premises, and then to proclaim it as an authoritative dogma, silencing or disparaging all objectors, that Grecian speculation aspires. To unmask not only positive falsehood, but even affirmation without evidence, exaggerated confidence in what was only doubtful, and the show of knowledge without the reality—to look at a problem on all sides, and set forth all the difficulties attending its solution—to take account of deductions from the affirmative evidence, even in the case of conclusions accepted as true upon the balance—all this will be found pervading the march of their greatest thinkers. As a condition of all progressive philosophy, it is not less essential that the grounds of negation should be freely exposed, than the grounds of affirmation. We shall find the two going hand in hand, and the negative indeed the more impressive and characteristic of the two, from

Zeno downwards, to our history. In one of the earliest memoranda illustrative of Grecian dialectics, the sentences in which Plato represents Parmenides and Zeno as bequeathing their mantle to the youthful Socrates, and giving him precepts for successfully prosecuting those researches which his marked inquisitive impulses premised, this large and comprehensive point of view is emphatically inculcated. He is admonished to set before him both sides of every hypothesis, and to follow out both the negative and the affirmative chains of argument with equal perseverance and equal freedom of scrutiny; neither daunted by the adverse opinions around him, nor deterred by sneers against wasting time in fruitless talk; since the multitude are ignorant, that without thus travelling round all the sides of a question, no assured comprehension of the truth is attainable.”*

THE SOPHISTS.

There were a number of philosophical logicians in Greece, in the early ages of her mental speculations, designated by the name of *Sophists*. The class of persons who went by this title occupy a conspicuous place in the history of logical science. (Their name stands for a particular species or kind of reasoning; or perhaps, to speak more correctly, for a particular or special application of the powers of ratiocination generally.) Many have been the discussions among philo-

* Hist. of Greece, vol. viii. p. 471. See also Bayle's Dict., article "Zeno." Brandis, *Gesch. der Griech. Rom. Philos.* i. p. 409. Simplicius, in his Commentary on Aristotle's Physics, p. 255, says that Zeno was the first who composed written dialogues.

sophers, both ancient and modern, respecting their motives and character as a sect or party. By the great majority of critics and historians, they have been denounced as the corruptors of the minds of youth; the subverters of their country's glory and independence; the overweening pretenders to science and wisdom; the wholesale dealers in logical quibbles, conceits, and conundrums; and the unscrupulous revilers and scorers of the truth in every department of human knowledge.

These opinions on the Sophists have, on the other hand, been in a great measure dissented from by some writers of judgment and reputation; in particular, by Mr Grote, in the eighth volume of his "History of Greece." He says—"The paid teachers, under the name of the Sophists, were Protagoras of Abdera, Gorgias of Leontini, Polus of Agrigentum, Hippias of Elis, Prodicus of Keos, Thrasy-machus of Chalcedon, Euthydemus and Dionysodorus of Chios—to whom Xenophon adds, Antiphon of Athens. These men—whom modern writers set down as the Sophists, and denounce as the moral pestilence of the age—were not distinguished in any marked or generic way from their predecessors. Their vocation was to train up youth for the duties, the pursuits, and the successes of active life, both private and public. Others had done this before; but these teachers brought to the task a larger range of knowledge, with a greater multiplicity of scientific and other topics—not only more impressive powers of composition and speech, serving as a personal example to the pupil; but also as a comprehension of the elements of good speaking, so as to be able to give him precepts

conducive to that accomplishment—a considerable treasure of accumulated thought on moral and political subjects, calculated to make their conversation very instructive, and discourse ready prepared, on general heads or *common-places*, for their pupils to learn by heart. But this, though a very important extension, was nothing more than an extension, differing merely in degree of that which Damon and others had done before them. It arose from the increased demand, which had grown up among the Athenian youth, for a larger measure of education and other accomplishments—from an elevation in the standard of what was required from every man who aspired to occupy a place in the eyes of his fellow-citizens. Protagoras, Gorgias, and the rest, supplied this demand with an ability and success unknown before their time; hence they gained a distinction such as none of their predecessors had attained, were prized all over Greece, travelled from city to city with general admiration, and obtained considerable pay. While such success, among men personally strangers to them, attests unequivocally their talent and personal dignity, of course it also laid them open to increased jealousy, as well from inferior teachers as from the lovers of ignorance generally—such jealousy manifesting itself by a greater readiness to stamp them with the obnoxious title of Sophists.”*

In order to form something like a correct notion on a subject of this kind, where such opposite opinions and sentiments have been expressed, one must look at it from different angular positions, and give a due share of weight to those extraneous influences, which,

* Hist. Greece. vol. viii. p. 486.

though not necessarily connected with the history of Grecian logic as a science or art, were nevertheless so intimately associated with it, from incidental circumstances, as to modify its exercise, to a considerable extent, in the great field of human thought and action. These influences chiefly lay in the political and social state of the country. It was divided into a number of petty states or republics, in which an oligarchical and democratic influence were each perpetually struggling for the ascendancy. Rhetorical and argumentative appeals to the passions and opinions of the people, were the stock and trade, as it were, of all who aspired to power and distinction in legislative affairs. The entire current of domestic and public education was therefore directed into this channel. A talent for disputation, for a power of minute analysis, or even for the handling of theoretical and abstract principles of speculation, was considered a favourable omen of a man's rising genius and future celebrity. In this perpetual agitation and contention, where mind was the grand and moving power, it may readily be imagined that many abuses and misapplications of its faculties and energies would arise. They would be irregularly developed, and subjected to a one-sided cultivation and exercise. The prizes of power and distinction lay too openly and too invitingly before the eyes of the citizens; and in that eagerness to seize hold of and retain them, what was *really true*, and really stamped with *sound wisdom*, became in a great measure secondary questions in the eyes of the struggling competitors. To gain a victory by disputatious acclamation, or to create doubts, or puzzle and bewilder the understand-

ing, where a victory of this kind was to be achieved, was the great object of men's ambitious strife and rivalry.

This state of affairs was sure to gather corrupt agents and influences around it from all quarters: and accordingly we find, that one of the most powerful stimulants to this undue cultivation and exercise of the logical energies of society, was the practice, which universally prevailed among the Sophists, of demanding and receiving large sums of money for their professional services. This led to great abuses, and was one of the chief sources of that derision which has been so unsparingly and indiscriminately heaped upon them as a philosophical sect or party. They travelled from state to state, and from city to city, disposing of their knowledge and talents to the highest bidder — taking especial care, however, to impart to their professional services, a marketable value at all times, whether they squared in or not with the dictates and interests of truth. Among a people naturally prone to mental speculations, and possessing no very high tone of moral feeling, and nearly destitute withal of every thing like religious principle or restraint, it is quite natural to suppose that a class of persons, set apart for such services in the logical art, and stimulated by such public and private advantages as they enjoyed, should overshoot the limits of truth and dignity, and often degenerate into the political demagogue and the speculative quibbler.

(Another agent which conferred tremendous power on the dialectics of the Sophists, was the proneness of the Athenian race to purely speculative topics. They

delighted in playing one antagonistic principle of human reason against another. It was not so much the *aid* or *purpose* of reasoning, as the mere *form* or *exercise* of it, which excited their attention, and received their acclamations. To be a reasoner or logician was one thing, and to be a lover and promulgator of truth was another; and this distinction became a settled and active principle in the public mind—leading, in fact, to an unnatural separation of two things which should always be in unity, and thereby operating injuriously to the cause of general truth, knowledge, civilisation, and human happiness.)

When we thus take into consideration the three elements which entered so largely into the dialective system of the Sophists—namely, the political and social condition of the Athenian commonwealth, the mercenary nature of the logical profession, and the tendency of the people to foster abstract questions of speculation—we cannot fail to see that a widely-spread and firmly concatenated plan of instruction, founded on and strengthened by such agencies, must have often operated injuriously on the cause of truth and justice. A body of public teachers spread over the whole country, acted upon by such gross and material influences, must have often left behind them any thing but a favourable impression of their nature and value. When the intellectual balance becomes unequally poised, the cause of truth must suffer.

Now it may safely and consistently be admitted, that there might be many distinguished and able men among the Sophists, who really and disinterestedly laboured for the solid and useful instruction of man-

kind; and yet there might be, in the great body who followed this itinerating logical profession, much that was highly censurable, and positively corrupt and debasing. Taking all the circumstances into consideration, there was much that was calculated to make this a very colourable presumption. The outward forms of declamation and dispute were the chief things which engrossed the attention of both speakers and hearers. The great thing was to produce effect. This led public declaimers to cultivate pertness, self-sufficiency, and a shallow and off-hand treatment of a subject; and, where this could not be successfully followed, they took shelter among the fastnesses of abstruse and mystical questions, susceptible of a double meaning and interpretation, or were otherwise of such a character as not to be solved by any powers of the human faculties. Then, again, came the great temptations, from the love of power and party influence, to bias the judgment, and to mislead both instructors and people; and this, too, on questions of great moment, but which intrinsically demanded the highest degree of dispassionate calmness and consideration to bring to a satisfactory and truthful conclusion.

The representations which the ancients have given of the Sophists may be safely taken as generally correct. These painted the tendency of their public and private teachings of the art of reasoning or argumentation, as calculated to retard the progress of real truth and sound wisdom. Men by this mode of tuition acquired a decided taste for fine and flashy ornaments, which retarded their advancement in more solid and valuable attainments. Besides all that was positively corrupt and base, there sprung out of the system of the Sophists

an arrogant and superficial pretension to knowledge, which overshadowed and overbore truth itself in all its native grandeur and simplicity. This evil is copiously and feelingly dwelt upon by many of the most distinguished philosophers of Greece.

And the same thing which happened in Greece relative to logical and rhetorical displays, would, under the same circumstances, happen to any enlightened country of Europe in the present day. If Great Britain, for example, were parcelled out into so many distinct and federal republics or states, each struggling for superiority and influence, and if this internal strife were to be carried on through the means of paid and pampered logicians and rhetoricians, we should have a race of Sophists the exact counterpart of those who figured in Greece more than two thousand years ago. A sense of justice would cease to have that degree of influence necessary to control party views and party interests. Men would meet each other, not for the laudable and useful purpose of hearing great truths expounded, but to be amused, or to award a prize to the cleverest speaker or the most dexterous declaimer. The disputatious spirit would necessarily acquire such strength and predominancy, as to be the all in all with every class of the people. To dispute equally well on both sides of a question, would be the great object of ambition among all ranks of society. True it is, that we have now, in the present state of learning and knowledge, sufficiently powerful guards or checks against a state of things like this ; but this circumstance does not weaken the original argument, but decidedly confirms and strengthens it. There is no form or de-

gree of influence which moral and religious principle can assume, which cannot be seriously weakened by a system of public and private instruction which trifles with truth, or weakens the innate power it should exercise over the human heart and affections.

What, then, was the logical system of the Sophists? It was, in few words, a system based on sordid and grovelling motives and contrivances. It was a narrow and contracted theory of the abstract nature and value of truth. Its aim was to show that "the worse was the better reason." It was declamation without knowledge—subtilty without comprehension—paradoxical without ingenuity—a display of the forms without the essence of reasoning—a fruitless and barren exercise of the noblest powers of the intellect—undertaken, not for the high and noble purpose of extending, but of checking the progress of sound knowledge and truth among mankind.

ANTISTHENES.—This philosopher entertained certain opinions on that branch of logic which embraces the nature and use of *definitions*. He held that a definition could not express the essence of a thing; for of all things we can only say, that, as a whole, *they are what they are*. A definition can only determine or fix the nature of one quality or attribute of a thing.

THE MAGARIAN, ELIAN, AND ERETRIAN SCHOOLS OF LOGIC.

EUCLID.—The logic of this distinguished philosopher is of a negative character. He tells us that the most

successful mode of refuting any train of argument, is *not* to attack the *premises*, but the *conclusion*.* He, and his immediate disciples and followers, pushed this doctrine to a great length.

SOCRATES.—The name of Socrates is intimately associated with the early history of logical science. (He was not only a great and profound reasoner himself, but he spent a long life in publicly teaching, “without money and without price,” what were the best rules and principles for guiding the judgment in the acquisition and promulgation of truth generally.) His name is one of these conspicuous landmarks in ratiocinative science, which strikes the eye of every inquirer into its external history and development. The Socratic form of argumentation, though pretty well known to most general readers and students, requires to be illustrated in some of its leading points. This we shall attempt to do in as brief terms as possible.

(It would appear that Socrates obtained his elementary knowledge of logic from the schools of Permenides and Zeno.) (It was in this course of elementary instruction that he imbibed the notion, which he so firmly and unflinchingly maintained in all his subsequent teachings, that we should look at every question in a double light—both negatively and positively—in order to arrive at just and satisfactory conclusions respecting it.) His doctrine, in this point of view, was an illustration of the common maxim, of *hearing both sides of an argument*. This is one among the many of those

* Diog. Laert., ii. 107.

general principles on which the entire fabric of his peculiar mode of reasoning rested.

(The logical system of Socrates, in its practical character and results, was analytical and synthetical, alternating as the occasion suited; but generally displaying the former attribute rather than the latter.) Xenophon, in his *Memorabilia*, tells us that "Socrates was constantly engaged in discussions on subjects immediately connected with human nature, investigating—"What is piety? What is impiety? What is the honourable and the base? What is the just and the unjust? What is temperate or unsound mind? What is a city? What is the character fit for a citizen? What is authority over men? What is the character befitting the exercise of such authority?—and other questions of a similar import. Men who knew these matters, he accounted good and honourable; men who were ignorant of them, he assimilated to slaves."

(Again," says Xenophon, "Socrates considered that the logical or dialectic process consisted in coming together and taking common counsel, in distinguishing and distributing things into *genera* or families, so as to learn what each separate thing really was.) To go through this process carefully was indispensable, as the only way of enabling a man to regulate his own conduct, aiming at good objects and avoiding bad. To be so practised as to be able to do it readily, was essential to make a man a good leader or adviser of others. Every man who had gone through the process, and come to know what each thing was, could also of course define it, and explain it to others; but if he did not know, it was no wonder

that he went wrong himself, and put others wrong besides.”*

(Aristotle also informs us, “that there are two things which must in justice be awarded to Socrates—the inductive method of proof, and the general definition of ideas—both of which belong to the first principles of philosophy.”†)

The analytical process, which formed such a conspicuous ingredient in the Socratic logic, was nothing more or less than an exhibition of that inward movement which every man of sane mind, no matter what portion of acquired knowledge he may possess, carries on almost every moment of his life. Our minds are perpetually dividing the aggregate representations of things presented to its contemplation, whether of a physical or mental stamp, and resolving them as it were into their original or primary elements; and after this is effected, we sum them all up again, contemplate the representations as entire and perfect wholes, or compound conceptions, and fix them as such in the mind. This mental process is so subtle and rapid, that we seldom can arrest the trains of thought which constitute it, a sufficient length of time to bring the faculty of attention to bear upon and observe them. But a person who has acquired some command over his mind, and can readily fall back on his own consciousness, is never at a loss to comprehend the whole phenomena of analysis and synthesis, and to recognise any chain of reasoning founded upon them.

The analytic and synthetic process of thought, which Socrates brought out so prominently before his coun-

* Xenophon Mem., iv. 11-12.

† Met., xiii. 4.

trymen, enter into every train of argumentation, however limited or unimportant. Hence the interest which his discourses excited. We are almost entirely engrossed with them. But general readers, and youthful students in particular, are apt to fall into an error respecting them, chiefly by the language which logicians and metaphysicians employ in giving an account of their nature and operation. We are apt to imagine that the analytic and synthetic methods of reasoning are purely matters of *art*, and were brought to light by the inventive powers of some philosopher or another. It is no uncommon thing to meet with statements in philosophical treatises, in which it is affirmed that Socrates *invented this analytic method*. But this is a great mistake. The power of dividing our general conceptions or ideas into their component parts, and the faculty of uniting them again into their former or original state of aggregation, are mental manifestations intimately blended with the very earliest movements of the mind of man, however rude or unenlightened it may be. We recognise the use of these intellectual instruments in the savage as well as in the philosopher, as far as their respective degrees of knowledge and the duties of life require their application.

(Guarding the reader, therefore, from supposing that Socrates *invented or discovered* this mode of analytical and synthetical reasoning, we must yet award him great honour for having so fully and clearly developed it; not, however, in its abstract or philosophical character, but in its practical details and consequences.) And unquestionably his dialectical plan of argumentation must have produced a great effect on the thinking

portion of the citizens of Athens, when we take into consideration what was the all-prevailing mode of philosophical discussion in his own day on every branch of human speculation and inquiry. The origin of things—their abstract attributes or qualities, and the whole phenomena of both the physical and material universe—were thrown into a promiscuous jumble, and dignified with the name of philosophy. This huge mass of speculation presented nothing tangible or practical to the understanding: it had neither beginning, middle, nor end. Now Socrates, by a steady and concentrated examination of his own mind, perceived the radical error of these philosophizers. He perceived that, by barely looking at these phenomena in their state of aggregation, no correct information could possibly be derived. The complex whole must be broken up, and resolved into its component parts. Every thing around him presented a wild chaotic mass till this was accomplished. He put, therefore, his powers of analysing, or his powers of observation, into full play, and tenaciously grappled with principles and doctrines in their totality. He placed, as it were, his dialectic wedges into them, and split and divided them into such manageable and intelligible portions as the ordinary mind could retain and profit by. The way and manner in which this was done was his own. His individual character displays itself here very strikingly. (He endeavoured to carry his analysis as far as he well could, without running into frivolous minuteness; and then he either performed the synthetic process himself, or left his hearers to make it in the way and fashion that best suited them. Every thing was to be done, how-

ever, according to a given plan or method; and this plan or method was to be in perfect agreement or harmony with the object which the mind had in view, by the adoption of any particular line of reasoning or argumentation.)

On this point, I cannot refrain from inserting a few lines from a recent and able writer already quoted:—

“In our present state of knowledge, some mental effort is required to see any thing important in the words of Xenophon; so familiar has every student been rendered with the ordinary terms and gradations of logic and classification—such as genus, definition, individual things as comprehended in a genus, what each thing is, and to what genus it belongs, &c. But familiar as these words have now become, they denote a mental process, of which, in 400-430 B.C., few men besides Socrates had any conscious perception. Of course men conceived and prescribed things in classes, as is employed in the very form of language, and in the habitual junction of predicates with subjects in common speech. They explained their meaning clearly and forcibly in particular cases: they laid down maxims, argued questions, stated premises, and drew conclusions, on trials in the *Dicastery*, or debates in the *Assembly*: they had an abundant poetical literature, which appealed to every variety of emotion: they were beginning to compile historical narrative, intermixed with reflection and criticism. But though all this was done, and often admirably well done, it was wanting in that analytical consciousness which would have enabled any one to describe, explain, or vindicate what he was doing. The ideas of men speakers as well as hearers—the produc-

tive minds as well as the recipient multitude—were associated together in groups favourable rather to emotional results, or to poetical rhetorical narrative, and descriptive effects, than to methodical generalization, to scientific conception, or to proof either inductive or deductive. (That reflex act of attention which enables men to understand, compare, and rectify their own mental process, was only just beginning.) It was a recent novelty on the part of the rhetorical teachers to analyse the component parts of a public harangue, and to propound some precepts for making men tolerable speakers. Protagoras was just setting forth various grammatical distinctions, while Prodicus discriminated the signification of words nearly equivalent, and liable to be confounded. All these proceedings appeared then so new as to incur the ridicule even of Plato; yet they were branches of that same analytical tendency which Socrates now carried into scientific inquiry. It may be doubted whether any one before him ever used the words *genus* and *species* (originally meaning family and form) in the philosophical sense now exclusively appropriated to them. Not one of those many names (called by logicians *names of the second intention*) which imply distinct attention to various parts of the logical process, and enable us to consider and criticise it in detail, then existed. All of them grew out of the schools of Plato, Aristotle, and the subsequent philosophers, so that we can thus trace them in their beginning to the common root and father, Socrates.”*

There are several general considerations arising out of the historical notice of the logic of Socrates which

* Grote's "History of Greece," vol. viii. 578.

are worthy of being placed on record, inasmuch as they display the sound and comprehensive view he took of reasoning as a science or art.

(One of the leading principles he steadily kept before his numerous auditories, was the lofty and dignified character of reasoning in itself. It was the chief ornament of our race, and the keystone to all our other intellectual endowments and graces. It represented the entire man, and was in fact the embodiment of all that could with propriety be termed rational belonging to him. It was not a thing to trifle or play with, but a serious occupation, always implying an imperative duty.

Socrates was guided in his logical processes by that which has latterly assumed the name of *common sense*. He was certainly the first logician who really considered it as an indispensable element in the art of ordinary ratiocination. This is implied in Cicero's declaration, that Socrates brought philosophy down from heaven to earth. (Xenophon likewise tells us, that when he wished to form a decision on any subject, his reasonings always proceeded from propositions generally assented to or understood.* He always took his stand on first principles, and felt dissatisfied with the mere logical forms of dialectics.)

In all the argumentive displays of Socrates, we recognise the high principle of moral responsibility which he invariably imparted to them. Truth was a thing which involved the highest interests to mankind; and under this grave and solemn light he discussed every question which came before him.

* Mem., 4, 6.

There are certain circumstances which have always entered into the estimate of Socrates' character as a logician, which are altogether unconnected with the abstract merits of that particular system of dialectics which he cultivated and brought into general use. These circumstances have their influence even at the present hour, and indeed always must have with all future generations. His death was tragical in the extreme. He was an acknowledged wise and good man. He laboured earnestly and disinterestedly to inspire his countrymen with lofty and pure conceptions of virtue, intelligence, and rectitude of principle. Yet he was doomed to feel the weight of the most flagrant and unprincipled cruelty. Though far advanced in life (being at his death in his seventieth year), he met his fate with that heroic and calm fortitude which has excited the admiration and sympathy of all writers and historians since his day.

CHAPTER II.

PLATO—ARISTOTLE, 380 B.C.

(GRECIAN logic, considered as a science, received a powerful stimulus from the lofty and splendid genius of Plato. Having a mind of the highest order, with a strong natural predilection to extreme generalization and theoretical disquisitions, he felt dissatisfied with the mere power of analysis displayed by his master Socrates, and the shallow and mechanical formalism of the Sophists. He sought for some solid foundation on which our reasonings and constant aspirations after truth might be placed. He attempted, therefore, to penetrate into the hidden constitution of the mind itself; to bring to light its remote and general principles; and to direct the inward power of consciousness to those deeper things which lie beyond the mere framework of logical or dialectic science. This he considered as the only chance that mankind had of placing truth upon a firm and abiding structure.

To a mind like Plato's, all preceding displays of logical science, taking them in their general aspects, and in conjunction with the discussions on their leading principles, must have appeared, in a great measure,

puerile and unsatisfactory. His innate love of truth was vehement and sincere ; and he could not view with complacency those whose chief occupation in the sphere of public and private tuition was to trifle with the judgments of mankind, and to throw the human understanding into a state of irremediable doubt and uncertainty on every topic interesting for man to know. The sophistical wrangling and declamatory rhetoric of the day, was a thing too flimsy and common-place for a mind of his order and pretensions. Though he had witnessed the effects of the public teachings of Socrates to counteract this injurious system by the analytical displays of his searching mind ; yet Plato must have perceived what, to his eye, would appear a radical defect in the Socratic method, calculated to limit his admiration of its scientific value and efficiency in the important work of laying a secure foundation of ratiocinative science. Analysis, however minutely and accurately exercised, can *of itself* lead to nothing. By dividing things into a multitude of particulars, and thereby placing the mind face to face with them, is only one of the functions of the reasoning process, and by no means the entire or final consummation of it. The synthetic mode was more to Plato's liking ; but it was a mode seldom used by his distinguished master, Socrates. All the various processes of argumentation, and the diversified rules which guided the different schools of dialectic art, assumed a detached and isolated appearance previous to Plato's day. He it was who, in treating of the science of truth in general, first clearly saw the importance of a thorough knowledge of the entire faculties and powers of the human intellect ;

and, above all, of entertaining those lofty and sublime conceptions of its origin and destiny, which can alone confer a lasting interest on the duties and teachings of the logician.

The first step which Plato took in his dialectic speculations, was to clear up the question as to the origin of our knowledge. This he conceived was of the first importance. Some philosophers who had preceded him, founded all truth on *sensation*; while others again as stoutly denied the validity of our sensuous impressions. He examined the arguments on both sides; and after many discussions came to the conclusion, that sensation cannot of *itself* be the foundation of truth, but only one of its instruments or accessories. A theory of evidence which rests merely upon the impressions which external objects make on our various senses, did in his opinion involve so many formidable difficulties, and even gross absurdities, that no rational philosopher could maintain it upon any plausible grounds whatever.

(On the nature of propositions, Plato enters likewise into various discussions, chiefly with a view of obtaining some clear conception of what is necessarily involved in every formal mode in which scientific or abstract truth can be presented to the intellect. A universal proposition is constituted of materials which possess a permanent and eternal existence—are true of all times and in all places; and therefore are distinctly removed beyond the sphere of that change which marks the results of all mere sensational knowledge. The truth which attends the impressions of the senses is transitory and variable; but the truth on which science is

founded, and which can be transmitted from age to age, resides in the soul itself, and possesses a real existence from all subjective influences whatever. If this were not the case, there could be no such thing as knowledge or reasoning; nor could the generation of men of to-day benefit in any degree from the experience and knowledge of those who had gone before them. There would be nothing among men save the fleeting and momentary sensations of sensual feeling.)

This notion of Plato's on the nature and character of all truth, and of the mode of acquiring and promulgating it, rests entirely upon his leading opinions as to the essence of our ideas generally. These opinions have been a topic of controversy in all ages. But into these disputes we cannot enter. Suffice it to say, that for the ordinary purposes we have now in view, we shall endeavour to give what we consider was the leading notion which Plato entertained as to the character of ideas, when considered in conjunction with the dialectic or reasoning science or art.

Now let us suppose, for example, a person taken to an eminence, and a beautiful and sublime landscape suddenly bursts upon his sight. Here is a general idea which at once engrosses his mind. He dwells upon it, is enchanted with it; and, as an entire unity or whole, it is for ever present to his mind. Should he, however, begin to analyse this aggregate conception into its elemental parts, still the unity of the whole is preserved, however varied the individual sensations or perceptions may be of which it is composed. He pronounces the landscape to be grand and magnificent; and these attributes are conceived to be in-

vested with permanent or eternal truth, inasmuch as the same idea would enter the minds of others at all times, if placed in the same circumstances. It is quite possible that the individual perceptions or sensations of men might vary considerably in the viewing of this landscape; but one sentiment, one opinion, one judgment, one idea, would be entertained by all—namely, the idea of grandeur, beauty, and sublimity. This would be general and permanent—would have the attribute of truth impressed upon it—would be a thing to talk, to think, to dispute about, altogether apart from the individual elements of sensation which enter into its composition or nature.

Now it is precisely the same with every other class of our general conceptions which forms the elements of our reasonings. The ideas which we have of what is good, what is just, what is right, what is intellectual, are obtained in the same manner, and clothed with the same attributes of permanency and stability, as those we have just enumerated as constituting the beautiful and sublime. And if ideas did not partake of this solid and stable character, there could be no such thing as reasoning or logical truth among mankind. The reality and immutability of truth, of which we are always speaking, and to which we are constantly making appeals, must, if Plato's notions are incorrect, be a mere delusion. He demonstrates this in numerous parts of his writings.

This notion of ideas must also be viewed in connexion with Plato's theological system. He may be said to have been the first man who ever gave to logical studies a religious bias. His ideal theory, which represents

the true and the real in science, has a firm and permanent foundation, inasmuch as he places it upon a supreme idea, which comprises all the subordinate ones, and imparts to all the details and minor divisions of truth, the unity and beauty which we all feel when they are presented to the understanding. Now this supreme idea represents the principle of all things—in fact, the idea of God, the source of all wisdom and truth. The Deity is therefore made the measure or standard of all that we call knowledge. It is here that all truth rests, as upon a grand and common centre. This centre is the beginning, middle, and end of all things.*

This idea of Deity comprehends within it every other idea, and is that unity which comprises or embodies the true essence of all things.† This is the reason why sound philosophy, in all ages, has connected that delightful sensation which we experience in viewing or contemplating what is good, just, humane, right, beautiful, orderly, and harmonious, with the Sovereign Power which makes and governs every thing. It is by this means that men are insensibly led to the notion of Supreme Power, to believe in its existence, and to recognise its influence over the destinies of humanity. Truth can have no value, no influence, no charm, unless viewed in relation to this great theological principle. God is, therefore, the true and only source of all that is beautiful and good, and the true aim and pattern, by striving after which man may participate in all that is innately grand, ennobling, beautiful, and rational.‡

* De Leg., iv. p. 715.

† Tim., p. 29.

‡ Phædr., p. 246.

These theological ideas possess great interest when viewed in conjunction with the dialectic system of Plato. That beauty or harmony which all truth possesses—not the mere beauty or harmony which body, or art, or any particular science has—but that beauty or harmony of the highest order, is the real and substantial emanation of the Divine nature, which is the essence of all beauty and harmony itself. Plato tells us, that precisely in the same manner as the material sun is not only the source of sight, and the real cause that objects are seen, but that they grow and are produced; so the Supreme Good is of such power and innate beauty, that it is not merely the source of all scientific knowledge to the soul, but is also the source of all being and reality to whatever appertains to human wisdom. And as the sun is not itself sight, nor the object of sight, but presides over both; so the Supreme Good is not science, or the essence of truth, but superior and distinct from both. They are of a goodly nature, but not the Supreme Good itself.*

(According to the Platonic notion of reasoning, mind or spirit is the grand moving principle.) It is impossible to maintain the progressive and permanent nature of knowledge or science, unless on the assumption of this truth.) And one of the chief attributes of this mind or spirit, is that innate fecundity or spontaneity which is indispensable to its existence, and which distinguishes it from all material properties and essences. The mind is self-moving, and therefore different from the body.†

What Plato advances on the nature of language,

* De Rep., iv. p. 506.

† De Leg., x p. 895.

and on that division of dialectics which embraces the nature of distinct propositions, does not differ very materially from many opinions of the present day on the same topics. He maintains that the employment of words in sentences or propositions is not arbitrary, but follows certain rules and principles. In every sentence or proposition there must be a noun and a verb, otherwise the mind is unable to grasp or lay hold of it. Being or existence is involved in every verb, and in every phase or form of it; and action and passion are consequently imparted to every object of which any thing can be affirmed or expressed. The verb is the living and animating principle of all things, and like the eye to the body, without which every thing is involved in impenetrable darkness. (This being or existence, as well as its opposite, non-being or non-existence, cannot be defined; only the being is represented by an effulgent light which encircles it; whereas the non-being is the pure negative, or the want of this irradiating influence.)

In every form of words, therefore, which can be submitted to the reason or understanding, there is, in order that it may be cognisant of them, an under-current of thought; and this thought is the subject of conviction or rejection in every formal proposition which the intellect can possibly frame, or which can be brought to bear on the minds of others. Words are, in fact, the simple instruments of the thinking principle, and in no case act as the substitute of that principle.

We have now touched on the leading and characteristic points of the logical system of Plato; and we

shall leave the subject for the present without any general comments. His views will, in many subsequent parts of our historical sketch, come under our notice ; and it would only be leading us into useless repetitions to enlarge on the matter at the present moment.

ARISTOTLE.

We come now to one of the most prominent landmarks of logical science and art—to Aristotle—one of the most surprising men in point of talent, reputation, and influence, whom the world has ever seen. The longest life of man would be inadequate to give a naked abstract of all that has been said and written on his logical works alone ; and as to the direct and indirect influence which these works have exercised over the minds of men for more than two thousand years, who can form an estimate of its intensity and range ?

In bringing the logical works of Aristotle before the reader's attention, we shall strictly confine ourselves, in the present instance, to a plain statement of their aim and character, leaving all general comments on their merits to subsequent sections of this treatise. This arrangement will prevent, as in the case of Plato, needless repetitions and observation ; besides its being more in accordance with the nature and offices of a mere historical sketch of this department of human knowledge. These two Grecian philosophers have been dialectic rivals from their very first appearance on the stage of life ; and even at this hour they may be said to divide substantially between them the suf-

frages of all logical thinkers in every section of the globe. Their respective systems are, therefore, necessarily brought before us in various periods of history, either in greater or less proportions, and are thus made topics of criticism and remark in every direction, and on every occasion.

The works of Aristotle of a logical character are the following, namely:—1st, The Book of the Categories; 2nd, One of Interpretation; 3d, First Analytics; 4th, Last Analytics; 5th, Topics; and 6th, Of Sophisms. We are told by Diogenes Laertius, that many other works of Aristotle's on the same subject are lost. It has been a common practice to publish the whole of these several treatises under the name of "Aristotle's Organon," or his "Logic."

(The Book of the Categories is preceded by some general and explanatory remarks, to which the schoolmen gave the name of *ante-prædicamenta*. Words are divided into three kinds; those whose meaning is fixed and determined, those that are equivocal, and those that are denominative.) What we say about any thing, is either simple, as *man*, *horse*; or of a compound character, as *a man fights*, *the horse runs*. On predication, Aristotle says, There is a distinction between a subject of which any thing can be affirmed or denied, and a subject of inhesion. A thing is said to be *inherent* in a subject, which, although not part of the subject, cannot be conceived without it; as figure in the thing figured. Of all things, some may be predicated of a subject which are not in any subject; as *man* may be predicated of Charles or John, but is not in any subject. Some again are in a subject, but can be predi-

cated of no subject ; as, for example, my knowledge of language is in, or belonging to me, as its subject, but it can be predicated of no subject, because it is an individual or personal thing. Again, there are some things which are both in a subject and can be predicated of it ; as, for instance, science, which belongs to the mind as its subject, and may be predicated of geometry. Lastly, there are things which can neither be in any subject, nor be predicated of any subject. All individual substances are of this class. They cannot be predicated, because they are individuals ; and cannot be in a subject, because they are substances.

(The Categories, according to Aristotle, comprehend all of which we can have the least knowledge.) They are ten in number ; namely, *Quantity, Quality, Relation, Action, Passion, the Where, the When, Position in Space, Possession, and Substance.*)

Quantity.—Quantity is divided into *discrete* and *continued*. *Discrete* is that whose parts can really be separated. These are again divided into successive and permanent. *Successive* quantity is that which comes by succession, as *time* and *motion*. The parts of these cannot be divided as those of number, but run onwards in a continued series. *Permanent* quantity is that which remains always the same, as *space* ; which never changes as time and motion do, but has always a lasting and permanent existence. Its category is *long, broad, and deep*. And here we may observe, that quantity, when considered barely extended, without breadth or depth, is called a *line* ; when it has both length and breadth, a *surface* ; and when it has length, breadth, and depth, it is denominated a *solid*.

Quality.—This is divided into four kinds. First, *Habits*; which are such endowments as are either created, or very materially strengthened, by repeated acts of the mind. When a man is virtuous, we say he possesses the habit of virtue. In a similar qualified sense we apply the word *habit* to *wisdom*, *temperance*, *learning*, &c. Those endowments which are acquired by different acts of the mind, are also considered as qualities; but they are usually called habits. Secondly, *Natural powers*; which relate more particularly to our bodies, such as the power of walking, riding, &c. These powers are possessed more or less by all mankind, and can be exercised as occasion requires. Thirdly, *Sensible qualities*; which are those we acquire by our senses from the operation of external objects, such as colours, tastes, smells, sounds, &c. Fourthly, *Figure* and *Form* are also ranked under this category; all external objects must be possessed of these.

Relation.—This indicates the relative connexion between a multitude of things which are of a heterogeneous and discordant nature, as one thing *like* another; one thing *unlike* another; one thing *near* another; one thing *far from* another; one thing *before*, *after*, *along with* another; one thing *great*, *equal*, *less* than another; one thing *the cause* of another; one thing *the effect* of another; one person a *master*, a *landlord*, a *tenant*, a *servant*, a *child*, a *parent*, a *subject*, a *wife*, a *slave*, a *client*, &c., of another. Many of the relations of which these words are descriptive, are from their very nature very complicated, and give rise to numerous logical distinctions, which are not here, however, of any vital importance to enlarge upon.

Action.—Action is either internal or external. Internal action is when I think of a particular thing confined within myself, and which effects nothing without me. External action regards something without; as when I cut a piece of wood, or hew a stone.

Passion.—After action, passion naturally follows; it is always expressed by a verb.

The Where.—This answers to the question, Where was such a thing done? If one asks where such a battle was fought, I tell him it was in such a country, and near such a city.

The When.—This category gives answers to questions relative to *time*. As, How long is it since he died? One hundred years ago.

Position in Space.—This relates to standing, sitting, before, behind, right, left, &c.

Possession.—This category involves the whole rights of property.

Substance.—This is divided into two kinds, spiritual and temporal. Spiritual is again divided into living creatures, as *man, beasts, birds*; and temporal into inanimate things, as *metals, minerals, earth, air, stone, &c.* Both orders may again be subdivided into an almost endless number of classes and divisions.

Aristotle explains, in several chapters, what the schoolmen called *post-prædicamenta*; that is, an explanation of the four kinds of terms expressive of opposition—namely, *relative, privative, of contrariety, and of contradiction.*

(The treatise termed *Interpretation* relates to language. What is a noun? What is a verb? What affirmation? What negation? What speech? Words are the signs

of mental things, and writing is the sign of words. Both the signs of ideas and the signs of words are variable among mankind, but the operations and powers of the mind itself remain the same.)

On the *First and Last Analytics*, and the book of *Topics*, we shall give some short account, sufficient, it is hoped, to make the leading principles of the Aristotelian logic intelligible to ordinary readers. To give any thing like a complete analysis of the entire system, would be altogether out of place in a work of this kind. We are compelled here to be brief; and this must be our apology for the omission of many things which some logicians may be inclined to think ought to have been treated of, and fully expounded.

(Although last in order as being treated of in the *Topics*, we shall notice the *predicables*. These, according to Aristotle, are four, namely, *genus*, *differentia*, *proprium*, and *accidens*; that is, every question must either be, first, about the genus of a subject; or, secondly, about its specific difference; or, thirdly, about something proper to it; or, fourth and lastly, about something accidental. The doctrine of the predicables makes an essential part of the Aristotelian logic; and the reasons which its author adduces for them are substantially the following:—

“Whatever is attributed to a subject, it must either be that the subject can be reciprocally attributed to it, or that it cannot. If the subject and attribute can be reciprocated, the attribute either declares what the subject is, and then it is a definition, or it does not declare what the subject is, and then it is a property. If the attribute cannot be reciprocated, it must be something

contained in the definition, or not. If it be contained in the definition of the subject, it must be the genus of the subject, or the specific difference; for the definition consists of these two. If it be not contained in the definition of the subject, it must be an accident."

The two treatises called "*Analytics*," develop the doctrines and principles of the syllogism. These are stated at full length, and in every possible form and combination. Though the Categories, the Predicables, and some say the Interpretation, are not claimed by him as his own, he does nevertheless lay claim to the syllogistic system as his own invention and development. The "*First Analytics*" contain forty-six chapters, which embrace the four leading topics; first, the conversion of propositions; secondly, the structure of syllogisms in all the different figures and modes; thirdly, the invention of the middle term; and, fourthly, the resolution of syllogisms. The "*Last Analytics*" treat chiefly of the *matter* of syllogisms; and this may be either true or false, probable or improbable.

Of the nature of the syllogism generally, we shall simply state that it is an argument or form of reasoning consisting of three propositions, the last of which is denominated the conclusion, and is inferred from the two preceding parts, which are termed the *premises*. The conclusion has two terms, the subject and the predicate; its predicate is called the *major* term, and its subject the *minor* term. In order to draw a conclusion, each of its terms is, in the premises, compared with another term, called the *middle* term. By this means one of the premises will have for its two terms the major term and the middle term; and this premiss

is called the *major* premiss, or the major proposition of the syllogism. The other premiss has for its two terms the minor term and the middle term, and is called the *minor* proposition. Thus the syllogism consists of three propositions, distinguished by the names of the *major*, the *minor*, and the *conclusion*; and although each of these has two terms, a subject and a predicate, yet there are only three different terms in all. The major term is always the predicate of the conclusion, and is also either the subject or predicate of the minor proposition. The minor term is invariably the subject of the conclusion, and is also either the subject or predicate of the minor proposition. The middle term never enters into or forms a part of the conclusion, but stands in both premises either in the position of subject or predicate.)

Syllogisms are said to be in various figures, according to the various positions of the *middle term*. All the possible positions of the middle term, are in Aristotle's system only three.* First, The middle term may be the subject of the major proposition, and the predicate of the minor, and this constitutes the syllogisms in the *first figure*. Secondly, The middle term may be the predicate of both premises, and then the syllogism is of the *second figure*. Lastly, The middle term may be the subject of both, which arrangement makes the syllogism of the *third figure*.

All syllogisms, according to the nature of the subject to be proved by them, are divided into *universal affirmative*, *universal negative*, *particular affirmative*, and *particular negative*.

* The fourth figure was afterwards added by Galen.

The following is an illustration of all the three figures. We must observe that A is the minor term, C the major, and B the middle term:—

FIRST FIGURE.

Universal Affirmative.	Universal Negative.	Particular Affirmative.	Particular Negative.
All B is C, All A is B; Therefore All A is C.	No B is C, All A is B; Therefore No A is C.	Some B is C, Some A is B; Therefore Some A is C,	No B is C, Some A is B; Therefore Some A is not C.

SECOND FIGURE.

This figure expresses nothing but negatives, general and particular.

No C is B, All A is B; Therefore No A is C.	All C is B, No A is B; Therefore No A is C.	No C is B, Some A is B; Therefore Some A is not B.	All C is B, Some A is not B; Therefore Some A is not C.
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THIRD FIGURE.

All B is C, All B is A; Therefore Some A is C.	No B is C, All B is A; Therefore Some A is not C.	Some B is C, All B is A; Therefore Some A is C.	Some B is not C, All B is A; Therefore Some A is not C.	No B is C, Some B is A; Therefore Some A is not C.
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The theoretical principle on which Aristotle demonstrates the four modes of the first figure, is denominated the *Dictum de omni et nullo*, and its nature is this: That what is affirmed of a whole genus, may be affirmed of all the species and individuals belonging to that genus; and what is denied of the whole genus, may be denied of its species and individuals.

(Although these various syllogistic figures have rules

peculiar to each, there are nevertheless some which are common to all syllogisms. Aristotle enumerates the following: 1st. Every syllogism must have only *three terms* or propositions. 2nd. The *middle term* must be taken *universally* in *one* of the premises. 3d. If one of the *extremes* be particular in one of the premises, it must be *particular* in the *conclusion*. 4th. The *conclusion* must be *particular*, if either of the premises be *particular*; and *negative*, if either of the premises be *negative*. 5th. No term can be taken *universally* in the *conclusion*, if it be not taken *universally* in the *premises*.

(THE BOOK OF SOPHISMS.—As the sources and forms of error are almost infinite, so are likewise the rules which may be framed for their detection and classification. Aristotle attempts to bring all the fallacies that can enter into the syllogistic form under thirteen heads—*six* of which refer to diction and language, and seven that are not in the diction.

The fallacies in diction are,—1st. When a word is taken at one time in one sense, and at another in a different sense. 2nd. When an ambiguous phrase is taken in the same way. 3d and 4th. Relate to ambiguities in syntax. 5th. Embraces ambiguities in prosody, accent, or pronunciation. 6th. Ambiguities from figures of speech.

The seven fallacies which lie not in language, but in things, are,—1st. Taking an accidental conjunction of things for a natural or necessary connexion. 2nd. Taking that absolutely which ought to be taken comparatively, or with certain limitations or qualifications. 3d. Taking that for a cause which is only an occasion or concomitant. 4th. Begging the question. 5th.

Mistaking the question. 6th. When that which is not a consequence is taken for a consequence. 7th. Fallacies which lie in complex propositions.*

We have now submitted to the reader's notice the leading framework of the logical system of Aristotle; but it must also be observed that, independent of its technical and colossal form, we find it supported and defended by a large mass of purely speculative thought. It is not as a mere system of dialectic formalism we must contemplate and value his labours as a logician, but as a profound metaphysician and philosophical thinker; and one who clearly perceived that every scheme for recognising and promulgating of truth, must ultimately rest upon the validity of certain abstract principles of mental philosophy. These principles must be examined and discussed; they must be brought out to open day, and stripped of those doubts and ambiguities which hang about them, from the very constitution of things, and the peculiar structure of the human intellect itself.

To these purely philosophical elements of his logical system, we have not space sufficient to do any thing like adequate justice. A few general remarks are all that we can devote to them; and must, therefore, leave the reader to fill up the hiatus by a perusal of the author's metaphysical works themselves, or such portions of them as have a direct bearing on his logical speculations.

It may be remarked in the first place, that Aristotle connects his logical system with a self-created and self-sustaining power in the universe. There must be

* See Dr Reid's "Analysis of Aristotle's Logic."

an ultimate basis on which every species and degree of truth must rest; for there could be no such thing as science from causes which run into an infinite series.* There must, therefore, be a First and Efficient cause.† If we cannot assume an eternal and permanent essence, independent of all physical or sensible properties, how could order exist in the world, or how could there be any thing like reason at all, seeing that the nature and purposes of reason are, in all cases where it is exercised, to perform nothing without an end or aim? The mind of man cannot be for ever tossed about in the region of infinity; all the leading divisions or principles of its structure point to something which is neither moved, nor can be moved by ought else than the inherent power of its own character or being.

Although many able critics on Aristotle consider that his leading views of the mind, and of the abstract nature of the reasoning faculties in particular, were of a more *material* complexion than those of Plato's; yet there is, I conceive, sufficient grounds for maintaining that his notions of the understanding, or the higher faculties of the intellect, were decidedly of an elevated and spiritual cast. His opinions on the nature of ideas, it is true, were not so sublime as those of Plato's; but the difference was not so palpable and wide as to justify us in classifying the Stagyrte with materialists of any grade whatever. We see clearly from his writings, that as a general principle he affirms, that from pure matter, and its laws and properties strictly considered, nothing can be rationally deduced, calculated to satisfy the innate craving of an inquiring spirit.

* Met., ii. 2.

† Phys., v. 1.

Many of the faculties of the mind he also views as merely instruments in the hands of the understanding, which is altogether of a superior nature, is entirely distinct from it, and out of which true science can alone be deduced. Memory is likewise considered as a mere motion of the soul, and does not partake of the nature of science. And even men of the most extended experience are looked upon as mere inanimate or lifeless instruments, when they are not inspired with the higher reason which is concerned in the investigations of the causes of those facts which come before them.*

In Aristotle's opinion it was of the greatest moment to all science that we entertain proper ideas of the relation in which the mind of man stands to the Divine or First Cause. Our notions of the nature and importance of all truth are directly and vitally effected by this relation. The exact position in which the human intellect stands in reference to the supreme and governing mind of the universe, appeared to him as involving, among other things, two very essential principles—namely, a constant desire to approach nearer and nearer to that grand source of all true wisdom and science; and yet, secondly, a deep-rooted conviction or consciousness that the contemplative reason could never arrive at that loftier and higher rule of evidence and truth from which its existence took its origin. These considerations naturally lead him into many perplexing and unfathomable questions; but he seems nevertheless, amid all his cogitations on the subject, to have maintained with remarkable tenacity and firmness, and even, betimes, at the expense of his logical

* Met., i. 1.

consistency, the complete integrity of that principle of connexion between the Divine and human minds, which he looked upon as the sheet-anchor of all sound philosophy and ratiocination. And hence many of his most remarkable and pointed expressions on the subject—such as his famous declarations, “That the thought of God is the thought of thoughts;” and “That the reason in man is exactly the same in its nature and offices as the reason in God.”

(The grand object, therefore, of all scientific truth, is to investigate the grounds on which the phenomena around us present themselves to our notice. The principles or rules of investigation are held together by, and rest upon, a supreme first cause, God, in whom alone every thing can be fully known and comprehended. We can, however, by the faculties we possess, attain to such conceptions as fully correspond to the objects and things we recognise: and to feel assured that these conceptions adequately express, to philosophical minds, the truth of things, such as science and the reasoning powers of man reveal them to us.) As Plato maintains that the Deity is the principle of unity of science and substance, so likewise Aristotle declares that God is both intelligence and the intelligible. (The principles and essence of all things, so far as their actuality is concerned, must be in perfect unison with the rational spirit of man; for this is a necessary and indispensable condition of their being apprehended and rendered intelligible by the reason or understanding.) This is the source of that refined and delightful feeling which the soul experiences in the pursuit of science and truth.

We ought not to omit, in this historical sketch of the famous logical system of the Stagyrte, a few remarks which he has left us himself on its comparative merits in his own eyes. These are important and interesting declarations, when viewed in conjunction with the subsequent history of his power and influence over the art of reasoning among mankind—

“Of those who may be termed inventors, some have made important additions to things long before begun, and carried on through a course of ages; others again have given a small beginning to things, which, in succeeding times, will be brought to greater perfection. The beginning of a thing, though small, is the chief part of it, and requires the greatest degree of invention; for it is easy to make additions to inventions once begun. Now, with regard to the dialectical art, there was not something done, and something remaining to be done. There was absolutely nothing done; for those who professed the art of disputation had only a set of orations composed, and of arguments, and of captious questions, which might suit many occasions. These their scholars soon learned, and fitted to the occasion. This was not to teach you the art, but to furnish you with the materials produced by the art; as if a man professing to teach you the art of making shoes, should bring you a parcel of shoes of various sizes and shapes, from which you may provide those you want. This may have its use, but it is not to teach the art of making shoes. And, indeed, with regard to rhetorical declamation, there are many precepts handed down from ancient times; but, with regard to the construction of syllogisms, not one.

“We have therefore employed much time and labour upon this subject ; and if our system appear to you not to be in the number of those things which, being before carried a certain length, were left to be perfected, we hope for your favourable acceptance of what is done, and your indulgence in what is left imperfect.”

The philosophical works of Aristotle, including of course his logical ones, had some singular adventures. Historians tell us that they remained in a great measure unknown after his death. Theophrastus, who succeeded him in the Peripatetic school, became possessed of them. This philosopher transmitted them to Neleus, his heir, who afterwards sold them to Ptolemy Philadelphus, king of Egypt, who conveyed them to Scepsis, a city of Troas, where they were deposited in a vault, lest they should fall into the hands of the king of Pergamus, who, it is alleged, wished to appropriate them to himself for some trifling amount of money.

In this place of concealment they remained for the space of one hundred and thirty years, until the damp and vermin had rendered them nearly illegible. They were, however, by some means not accurately known, preserved from destruction, and were afterwards sold to Apelicon, a philosopher of the Peripatetic school, who caused them to be transcribed, and to be placed in his library. There they remained till Sylla, a general of the Roman army, conquered Athens, when he came possessed of the entire library of Apelicon, and transmitted them to Rome. It was here that one Tyrannion, a Greek grammarian, and an intimate acquaintance of Cicero and Atticus, obtained a copy of Aristotle's writings, through the instrumentality of the librarian

of Sylla ; and Tyrannion, being an able critic, got them transcribed and corrected with great precision ; and from this copy the Romans seemed to have received the chief portion of their knowledge of the Peripatetic philosophy.

It is supposed that the Arabian philosophers derived their first acquaintance of the logical works of Aristotle, from copies of his writings which the king of Egypt purchased. The knowledge, however, of his works in Italy, appears to have been nearly extinguished by the inundations of German barbarians, who overthrew the Roman dynasty in the fifth century. It is confidently affirmed that there were no part of his works much read or admired in Europe till about the eleventh century ; and that the knowledge of them then acquired, was chiefly obtained through the instrumentality of the Arabian writers.

CHAPTER III.

PROGRESS OF LOGICAL SCIENCE FROM THE DAYS OF
ARISTOTLE TO THE CHRISTIAN ERA.

WHAT was the degree of influence which the logic of Aristotle exercised immediately after his death, on the minds of the Athenians, we have but very scanty means of knowing. The history of some succeeding centuries presents his dialectics only now and then to public notice; and, most commonly, in conjunction with other branches of his philosophy. From a story which has been often told, it would appear that he was somewhat anxious that a system which had cost him so much labour, and on which he seems to have anticipated that his fame in after times would ultimately rest, might receive the fostering care of the most influential and talented of his friends. The story runs thus:—That a little before his death, and when very infirm, he was requested by some of his disciples to name a successor worthy of teaching his philosophy and logic. Two of his scholars appeared to him eminently fitted to discharge this duty—Theophrastus of Eresos, in Lesbos, and Eudemus of Rhodes. After some little delay, Aristotle asked for some Lesbian and Rhodian

wines, and after tasting of each, he pronounced them both good, but that he had a decided relish for the Lesbian. His disciples interpreted this decision as intimating that Theophrastus should be the successor to his school.

Theophrastus became, therefore, the head of the Peripatetic school, and he is stated to have filled the situation forty-five years—to have lived to the great age of ninety-nine—and to have had under his tuition as many as two thousand students at one time. Both he and Eudemus maintained their master's logical system nearly entire as they found it, with the exception of some trifling matters of detail. It is, however, affirmed by some writers, that their united teachings imparted, on the whole, a more material and mechanical spirit to the general system of reasoning which the Stagyrte had left behind him.

Whether this be the case or not, certain it is, that the latter Peripatetic philosophers gradually lowered the standard of truth, and of those faculties of the mind more immediately subservient to its discovery and promulgation. Aristoxenus instituted the analogy between the soul and the principle on which the harmony of musical sounds is founded. As this is the result of certain fixed and unalterable relations which subsist between the various tones; so the soul, in like manner, is the result of certain relative arrangements of the different parts or functions of the body—the intellectual principle being only a given tension of the physical frame. Dicæarchus follows in nearly the same strain. He distinctly declares, that the soul and reason are not entities, but merely a certain state of

body; a species of lively animation, which results from the peculiar configuration of the various parts of our bodily structure.

The logical speculations of Strato, of Lampsacus, and of Lycon, Ariston, of Ceos, Critolaus, his immediate followers and disciples in the Peripatetic school, seem to have been nearly of the same stamp with those we have just alluded to. All these philosophers appear to have paid but a very slight and superficial attention to those comprehensive mental principles connected with the evidence we have of scientific truth and general propositions. The material, the technical, and the sensible, characterised their ordinary philosophical teaching.

Following the Peripatetics, another class of logicians made their appearance, denominated *Sceptics*. The prominent feature of their reasonings was a spirit of doubt; and hence the name has descended to our own times, as descriptive of a captious rejection of ordinary truth or evidence on subjects usually submitted to the understanding. The Sceptics, in fact, constituted only a species of that logical genus called Sophists, of whom we have already spoken.

The sceptical logicians, who gained some degree of renown about this period of history, owe their origin, partly to the peculiar political circumstances in which their country was then placed, and partly to the old leaven of sophistical wrangling and rhetorical declamation, which so prominently marked the days of Socrates, and those philosophers who immediately preceded him. There was here a union of the Cynical and Magarian notions of the nature of truth; while a

party sprung up called the *Dialectici*, whose profession was to challenge disputations on the most subtle questions and interminable disputes. This mass of floating doubt and captiousness became moulded into something like a formal system, for the development and promulgation of which Pyrrho of Elis laboured with great zeal, and some ability.

This philosophical logician is described by historians as having been of low parentage, and by profession a painter. He likewise served with the army of Alexander the Great in India. On his return to Greece he devoted himself to the study of philosophy, and particularly to the system of the Dialecticians, and the speculations of Democritus, the latter of whose writings, it is said, first inspired him with a love of study and intellectual improvement. He also cultivated an acquaintance with the speculative notions of the Gymnosophists of India, whose ascetism he admired, and whose mystical doctrines constituted a formidable jungle, through which his subtilty and dialectic skill sought in vain to penetrate.

Pyrrho left behind him no written records of his philosophy and logic. His successor was Timon of Phlius, originally a choric dancer, and who studied logic under Stilpo of Magara and Pyrrho of Elis. After having acquired an ample fortune by his itinerating disputations, he retired to Athens, where he spent the remainder of his life, which was very long, in comfortable ease and independence. He is highly spoken of for the purity and simplicity of his manners.

The Grecian scepticism, or Pyrrhonism, was em-

bodied in what were termed the *Ten Tropes*, which are often alluded to in the writings of the philosophers of this and the succeeding ages. Thus *tropes* may be considered as a species of logical rules for the government of the mind, in the pursuit and acquisition of truth. They are more of a negative than positive character. The principles of doubt involved in them go simply to recommend *a suspension of assent*, rather than a positive denial of matters submitted to the understanding.*

The stronghold of the Sceptics was the variable nature of our ideas of pure sensation. These always afforded them weapons against the attacks of their adversaries. The Sceptics carried their analogical reasonings from this source into every department of human knowledge, but particularly into our notions of what constituted good and evil. Here, too, they received fresh succour, from the apparently discordant opinions and judgments of mankind upon the rules and obligations of morality. People in different countries have different notions of what is proper and beneficial; and this diversity is strictly analogous to the variable sensations of external things, produced by the operation of the senses. It would be idle to deny,

* "Que Pyrrhon ait été amené, par son doute universel, à ne pouvoir agir, à ne croire à rien dans la pratique, à ne pas se détourner pour éviter un précipice, comme le raconte Diogène Laërce, ces assertions sont sans fondement et tout-à-fait invraisemblables. Ce philosophe reconnaissait, au contraire, l'autorité du bon sens, des lois, des usages; il admettait des règles de morale, et prétendait que ces règles avaient leur fondement dans le cœur. Il voulait qu'on suivit les apparences, sans se mettre en peine de la réalité; qu'on agit comme le commun des hommes, qu'on évitât soigneusement les discussions épineuses qui ne pouvaient enfanter que le doute, et qu'on demeurât dans ce repos d'esprit qui seul peut faire le bonheur de l'homme."—Bouvier, *Hist. Abrégée de la Philosophie*, vol. i. p. 184. Paris, 1844.

that such analogical reasonings would have a powerful effect upon popular opinion ; but still the nature of all similar logical declamations exercises a pernicious influence over the progress of sound and rational knowledge.

The more abstract scepticism among the Greek and Roman philosophy has a great uniformity of character, because it was grounded upon views and arguments which lay very open to common remark and observation. The following may be stated as the principal springs out of which the various currents of sceptical opinions flowed, in almost every period of the ancient philosophy :—

1st, The great diversity in animal nature as to its origin, organization, &c., the differences in which external objects are viewed by the inferior creation ; all of which go to show what a vast variation there must necessarily be in the conceptions formed of the qualities and properties of external bodies, through organs of sense so much varied. The question then is, as animals are deprived of reason, what grounds have we to prefer our perceptions to theirs, when we are in the search of truth ?

2nd, The diversity of character is very great in human nature, and the differences among men, both in mental and bodily qualifications, are varied beyond all conception. This contrariety, joined to the interminable disputes among philosophers themselves, and the differences in tastes and affections, particularly noticed by physicians, render all attempts to arrive at the truth of things hopeless.

3d, There is a great difference in the organs of

sense, and every organ has its appropriate objects. Do the qualities of these objects belong to the particular confirmation of our senses, or only to the objects themselves? Have they only as many and such qualities and properties as we perceive, and have they none which we do not perceive? What are the constituent elements of objects—have they just such and such qualities, and no other?

4th, The various ways in which our physical organs are affected, by disease, sleep, old age, sadness, fear, cold, heat, and a thousand other circumstances, must necessarily create a great diversity of judgment relative to things around us.

5th, The differences from variation in the quantities of things, produce often opposite judgments and conclusions. A little more heat, a more rapid motion, or a little more wine or spirit, creates divers changes in our opinions. The general aggregation or division of homogeneous bodies greatly modifies sensation.

6th, The various kinds of education among men, and the different laws and conventional rules of society, beget opposite opinions and conclusions on the most important subjects.

7th, From the interminable mixtures and combinations of things, it is next to impossible to form a correct opinion of the mass of objects around us. Colours, density, and forms, are for ever changing, and the eye can only judge of that which is at the moment an object of vision.

8th, The relations of things one with another are continually changing. We seldom see an object precisely in the same point of view twice in succession.

9th, All relations and objects, opinions, notions, and principles, are connected together, and have mutual dependencies one upon another; so that the mind of man can never be certain that the conclusions it forms are the really true ones. All things are not perceived; therefore our judgments are one-sided.

Of the logical views of the Epicureans, with Epicurus himself at their head, little can be said possessing any great novelty or interest. Epicurus and his disciples considered all truth and evidence through the medium of the senses and bodily appetites; and formal rules relative to definitions, axioms, and propositions, were considered by them of little or no utility. Whatever was useful, pleasant, and delightful, was true; and these were the chief, if not the sole attributes which constituted the evidence of real science. The absolute criterion of truth rests therefore upon the senses. These are the only tests we have, and they never deceive us. Whenever there is any discrepancies from this source, the real cause of them arises from hasty or premature judgments on objects presented to the external organs.

The reason or principle of intelligence is not altogether a dependent or slavish instrument. The Epicureans invest it with supreme power and authority over the whole of the senses. Its office is therefore to mould the sensuous impressions into what we call thinking, conceiving, reasoning, and deliberating. The mode in which this transmutation is effected, appears a little singular and whimsical. There are certain *airy and spiritual essences* generated, which present themselves to the reason. These essences are disengaged

from external bodies, or are formed in the air, and seize hold of the mind, and fix themselves in it. These essences have also a sort of voluntary power, making choice of those intelligences whose attention is excited, and such as direct themselves to particular forms of thought; to others they remain perfect strangers. Attention is, then, reason's chief instrument; by it logical judgments and conclusions are formed.

The logical system of the early Stoics is worthy of consideration on two or three points.

The Stoics do not appear to have entered very deeply into the logic of either Plato or Aristotle. The elaborate system of the latter was in a great measure overlooked by them. They chiefly occupied themselves with speculations on the foundation of truth or science, and laboured hard to reconcile those conflicting views which arose out of the connexion subsisting between external objects and the sentient or thinking principle which perceives them. They set but a light value on the opinions and labours of their predecessors, and were extremely anxious to appear to the world in the character of original thinkers and expounders of the laws of human thought.

All general truths or maxims employed in formal propositions, or in trains of reasoning, were considered by the Stoics as proceeding from a certain refined process of sensation. Such truths as did not appear to follow immediately from the impressions of outward things, were formed in the mind by a species of analogy or transposition. There were certain scientific or logical rules under which our thoughts invariably arranged themselves; and these rules were the great

guides of the uninstructed and unlettered part of mankind, in all those matters necessary for their existence and wellbeing.

These universal or general ideas seem to have puzzled the Stoics not a little. Their notions of transformation from sensible perceptions were always falling short of that measure of conviction which could satisfy a rational mind. Their discussions on this point were far from being consistent, or even intelligible. They laid down certain principles, but expressed themselves violently hostile to the inferences fairly deducible from them. At one time general ideas were identical with the *mentally conceivable*; and at another they were merely a peculiar form of language. It was in this manner that they bandied the subject from one hypothesis to another, without coming to any fixed or settled opinion on the matter.

These speculations on general and particular ideas, naturally led them to the consideration of the categories, especially those of Aristotle. They did not adopt them, but sought to frame categories of their own, of a more accurate and comprehensive character. These they reduced to four; namely, the substrate, or that which forms the groundwork of things; secondly, that which has qualities or attributes; thirdly, that which has a general relation; and fourthly, that which has a particular relation to some other thing. These categories the Stoics considered an improvement upon those of Aristotle, inasmuch as they were both more comprehensive as well as accurate. They conceived that no mere investigations into the forms of logical science could prove of an utility, without they were based upon

some generally correct notions as to the fundamental principles of all scientific truth.

The substrate embraces the imperishable elements of things; quality is that which resides in, or constitutes a thing to be what it is. This second category is necessarily subordinate to the first, but stands nevertheless next in degree of importance to it. The third category indicates a changeable or perishable property or relation, and not that which possesses a positive fixity of existence. The fourth category is the lowest class of our thoughts, merely designating these particular objects which have a circumscribed, a transitory, or local existence. With the Stoics the essence and the subject were the highest objects of intellectual perception, and to which every thing must be referred; because here rested that absolute entity which embraces all forms of existence or being.

There was a great deal of the sensible and material in the logical philosophy of the Stoics. They viewed mankind in their practical and everyday movements of life. They took men as they found them. And hence it is that theories of every kind hung loosely about them. What floated on the general surface of society constituted the staple of their public teaching. Theories they had undoubtedly, and an abundance of profound speculation; but there was a wider chasm between their speculative and practical systems, than between any other class of ancient philosophers. And the natural consequence of this is, that we find greater inconsistencies and discrepancies in their system, when viewed as a whole, and in reference to logical science, than in any other which antiquity presents to us.

The logical views of the *Latter Stoics*, or *New Academy*, do not very materially differ in theory from those of the old, but they diverge from them in practice to a considerable extent. Arcesilaus, one of the principal conductors of this school of philosophy, revived the Socratic mode of argument, and endeavoured to take great pains to inculcate in the minds of his students the propriety of entering fully into the merits of every question, and also of allowing an opponent, in every argument, to state his case with all reasonable degree of amplitude. Arcesilaus gave a decided preference to the logical principles of Plato over those of Aristotle.

(Carneades followed) in the *Latter Academy*, and greatly distinguished himself as an expounder of logic. His dialectics are eulogized as being at once precise and comprehensive. He was a man of splendid oratorical powers, so much so indeed, that his appointment as one of the ambassadors of Athens to Rome, was the result of this reputation. It was in Rome where he delivered a series of famous lectures on the nature of *justice*; entering fully into all the complicated views of the question, and balancing his philosophical arguments so nicely, that his able and enthusiastic pupil, Clitomachus, declared, that he never could detect what his master's own opinion on the subject really was.

This mode of argumentation naturally led him into what were considered sceptical habits. He called in question the criterion of truth. He thought philosophers up to his day had failed in establishing any thing of the kind. This criterion must be sought for either in our sensuous impressions, or in the reason itself. But he maintained, that whatever is a judgment of the

understanding cannot be such solely from its own nature, but must have some relation to sensation or conception ; and, on the other hand, sensation itself is not a chain of argumentation, from which a judgment proceeds, but solely a fleeting, uncertain, and transitory thing. Therefore, on whatever side the logician looks, as to the absolute standard by which all evidence should be tested, he meets with insuperable barriers in the way of a rational solution of the difficulty.

(Notwithstanding, however, his arguments against a standard of truth, we find him insisting strenuously for man's power to seize hold of the truth of things by a system of probability. Though nothing was absolutely, yet many things were probably true ; a very paradoxical proposition. His theory of probable evidence rested on the distinction he made between the elements of thought, which related to the object, and the element considered in relation to the thinking principle itself, in its general character. Every idea has two relations, one to the object presented to the senses, and one the presenting subject. The first is stamped with truth when it agrees with the object, and is false when it does not agree with it ; in the second relation it is either true or false :—if the former it is called *probable* ; if the latter, *improbable*.)

We know little of the logical system of Clitomachus, a disciple of Carneades, with the exception that he is said to have written four books on the general reasons which ought to induce us to suspend our assent to the truth of things.

(Philo wrote largely on the nature of truth and the rules of evidence. He distinguishes three kinds of

truth; first, That which is deduced from a self-evident proposition; secondly, That which is deduced from a false proposition, though conditionally true; and thirdly, From a proposition from which the conclusion presents not only a hypothetical but a real truth, in spite of any absurdity contained in the truth itself.)

The Alexandrian school of logic exercised indirectly no small degree of influence on the science of argumentation. Diogenes Laertius tells us, that the philosopher Potamon was its founder. He goes on to observe:—“But a short time since a new sect called Eclectic had been introduced by Potamon of Alexandria, who selected from each school of philosophy that which he considered the most worthy and important. He thought there were two criteria of truth. One resided in the same faculty which judges; that is, reason, which presides over the whole system of intellectual laws or movements. The second consisted in those perceptions which serve as the measure or instruments by which knowledge is communicated; or, in other words, in the certainty and evidence of the received impressions from external objects.”

On the Roman school of logic we have not much to say. Sylla brought to Rome the works of Aristotle, which became generally accessible through the means of a translation effected by Tyrannion and Andronicus of Rhodes.

On the difficulties connected with the investigation of truth in general cases, Cicero makes the following remarks:—“All knowledge is encircled with difficulties. Such is the natural obscurity of things, and the constitutional weakness of the principle of intelligence,

that the most sagacious minds of antiquity have doubted whether we ever can arrive at truth at all. The most part of mankind embrace opinions without having the power of choosing them: they judge of what they do not know, and attach themselves to some favourite system, as mariners do to a rock in a tempestuous sea; but a philosopher will only give his assent after he has patiently heard both sides, and after a careful review of all the opinions which have previously been advanced on the subject.”*

After Cicero we have Alcinous, Maximus of Tyre, Alexander of Aphrodisias, and Galen; the latter of whom paid great attention to logical science, and was the author of the fourth form of the syllogism, which is commonly given in our school-books of logic.

* De Finibus, ii. 12.

CHAPTER IV.

GENERAL REMARKS ON THE INFLUENCE OF CHRISTIANITY
ON LOGICAL SCIENCE.

WE come now to an important epoch in the history of the science of reasoning—to the establishment of a system of theology, which has influenced the logical powers of men to an astonishing degree, from the period of its introduction to the present hour. Though laying down no formal rules, no classification of propositions, no technical framework, by which men might be guided to reason soundly and safely on all topics cognisant to the understanding; yet in place of these, there are embodied in the Christian code certain comprehensive principles and axioms, of immense value and power to the rational faculties of man.

The observations we are now about to make in this chapter, are altogether of a general character; yet we hope they will not prove the less useful to the ordinary reader, or be considered less appropriate in the estimation of the scientific, to the design and scope of this work. Although at first sight it may appear to many that theology is placed at a great distance from the science of ratiocination, yet we trust to show that there

always has been, and ever must be, a vital and living sympathy between them—a sympathy, in fact, of such a character, as to constitute the permanent distinction between man and the animal creation—between what is rational and wise, and what irrational and brutish.

These introductory remarks will be arranged under two leading divisions; those of a theoretical, and those of a practical nature.

It will not, I conceive, be doubted by any person competent to give an opinion on the subject, that every logical system, whether of a purely formal or of a scientific cast, owes all the interest it can possibly excite in the estimation of men to certain principles, which lie as it were in the background from it, and which are seldom or ever formally presented to the understanding in the ordinary course of tuition. To suppose for a moment that any logical scheme—a thing professedly teaching you how you are to detect truth from error—could have any possible hold of men's esteem—could be an object of any conceivable value, apart from these rudimental notions or conceptions inseparable from the nature of truth itself, and inseparable from the mental nature of that being to whom that truth is of unspeakable importance; is a proposition so ridiculously absurd, that I shall not assume that any man, how desperately soever he may be wedded to any particular system, will in his cool moments give his assent to it. To suppose any such thing, would be to suppose that all the lessons of history had been thrown away upon him, and that he had set at defiance all the dictates of common sense.

That the rejection of this supposition is not a merely

gratuitous or unwarrantable assumption, will, I trust, appear from the following considerations.

The science or art of Logic differs from every other department of human knowledge in one important particular. It is conversant about *truth*, which is the only thing, quality, or attribute, which renders any science interesting to man. Logic has, therefore, to do with all subjects of inquiry. It does not stand apart from all, but it exercises a supervisional power or authority over all. Other sciences are mere instruments in its hands; and it forms the medium of communication between them, and the soul or intellect of man. It must examine into, arrange and classify, weigh and balance, direct and guide, and pronounce an opinion and judgment upon those particular elements which constitute knowledge, and which make it that really important and interesting thing which mankind feel it to be. For it must be borne in mind, that whatever may be the qualities or properties which we may conceive inherent in truth, one thing it must possess, that of taking a firm hold of the inward nature of man—of his mind and affections—or it cannot be said to be truth at all. But on this latter point we shall speak more at large afterwards.

Now, all the ancient logicians of whom we have already spoken, saw clearly that the purely formal part of logic, or indeed any scientific view of it whatever, could only derive its validity and importance from a consideration of the truth and full comprehension of certain other principles on which it naturally rested, and which really conferred upon it every property which could render it either acceptable or beneficial to

the human race. This they clearly perceived. And, as a confirmation of this fact, we can appeal to all their writings and speculations on the nature and importance of scientific disquisitions, considered in relation to their nature or character.

To enter fully into all these discussions, or to travel over the entire field of ancient investigation on this matter, would far exceed the limits of the present work. But we shall just dot down a few of the leading topics, which seem to have exercised a great influence over the minds of the ancient philosophers who especially treated of logical systems and theories, partly because these topics enveloped their minds in doubt and uncertainty, and partly because they were the offspring of a deep-rooted conviction, that it was absolutely requisite that some fundamental truths relative to the understanding should be fully considered and agreed upon, before any mere framework of logical rules could be erected for the use of their scholars or students.

Some of the principles or matters which the ancients considered as lying at the root of all logical systems, were the following :—*1st*, Whether there was a creative power in the universe? *2nd*, Whether this power was invested with the attributes of goodness, wisdom, and truth? *3d*, Whether the mind of man formed a part of, or was made analogous to, this Divine mind or principle? *4th*, Whether this intellectual part of man was of an absolutely spiritual nature, and was endowed with immortality? *5th*, Whether there is any thing absolutely true or absolutely good in the nature of things? *6th*, Whether the true and the good relatively to man, be the same in essence as the true and good rela-

tive to the Divine nature? 7th, Whether man can form any adequate or correct conceptions of matters beyond the pale of the material universe? 8th, Whether man was an object of any particular care or interest in the Divine economy of the world, and had any means of ascertaining this fact? And, 9th, Whether we have any general and definite ideas in the mind, when we make use of such words as truth, justice, power, existence, creation, intelligence, benevolence, virtue, vice, &c. &c.?

We have only to cast a cursory glance over the writings of the ancients, to see how large a share of attention was paid to these, among other topics of a speculative character. These subjects, it must be remembered, were not investigated as subjects belonging exclusively to the science of mind; but were considered and classified in their systems as logical elements, and brought prominently forward, as occasions required, to fortify and recommend particular schemes of ratiocinative art and dialectical argumentation. The Pythagoreans, the Sophists, the Socratics, Plato, Aristotle, the Sceptics, the Academics, and in fact every section of Grecian thinkers, took a more or less distinguished part in discussions of this kind, making them the foundation, or starting-point, of their respective theories of general reasoning. Whether this mode of philosophising was a legitimate or sound one, we need not at this moment stop to determine. In the present stage of the argument it is with the *fact* alone we have to deal, and this is indisputable. It is one of those things which cannot be gainsaid, in as much as it is supported by the entire train of specula-

tive thought for centuries, and confirmed by opposite and rival schools of profound learning and logical skill.

Such, then, being the state of things when Christianity made its appearance (always meaning by this, the Old and New Testament conjointly), it cannot be a matter of surprise that it should powerfully influence the general current of logical thought among those who adopted it. And it just did so happen, that ancient learning and speculative curiosity were at a very low ebb, both at the commencement and for some time after the introduction of the Christian system; and it consequently became almost the only source from which any positive knowledge and learning could be derived. A union was now formed between the religious and literary elements, which has subsisted ever since. Christianity was placed as a beacon on a hill, to be a light and a guide to all succeeding generations of thinkers. It threw a new element into the rational powers of man—it made his logical path shorter and smoother. There was a glare of sunshine thrown upon all those speculative dogmas which had previously engrossed the attention, and bewildered the ingenuity of the most refined and intellectually gifted of the sons of men. This great and renovating change was effected, not by the introduction of philosophical dissertations on each or any of these dogmas; but there was simply, though under external circumstances the most sublime and impressive, a *declaration* from heaven made, respecting, among other things, many of those matters which had previously been stumbling-blocks to all the ancient sages of the world. This declaration influenced the reasonings and judgments of man in divers modes and

degrees ; some implicitly believing in, and adopting it as a rule of thinking and acting, while others again felt nothing but doubt and hesitation. Still, within the sphere where it was proclaimed, there became inseparably amalgamated with the elements of human thought, certain principles of knowledge and criterions of truth, which were henceforward to effect great and permanent changes in all the grades of society, on their future intellectual pursuits and speculations.

Now, let us just cast a retrospective glance at the present state of the question, up to this stage of our progress. Here we have presented to us an accurate and lengthened historical chart of logical speculation for several centuries, among a highly civilized people, who were utter strangers to all and sundry of the peculiar doctrines of the Christian system ; but who had made, nevertheless, great advances in demonstrating the importance and necessity of some principles which the human understanding required, in order to impart confidence to its decisions, and to point out that path it might beneficially and profitably take in all its movements and aspirations. The philosophers among this people were possessed of intellectual endowments of the highest order—endowments which have never been surpassed by any subsequent class of human beings, and which are even at the present moment objects of deep-felt wonder and admiration. They are one and all engaged in schemes for the improvement of the mind, and, above all, in giving a right direction, and imparting a strength to the reasoning faculty, which they considered as the sole instrument for the discovery and promulgation of *truth*, which they affirmed was the

only object interesting to man as a citizen of the universe. For this purpose they examined the structure of their own minds with the utmost assiduity and care. They recognised certain elementary principles shadowed forth with more or less distinctness, on which their respective ratiocinative systems vitally depended. These principles were grappled with, discussed, analysed, viewed in every possible aspect, and assayed to be developed with marvellous acuteness and philosophical skill. Yet no firm decision could be come to on any of them. Universal doubt enveloped the understandings of the sages. They placed doubt against doubt, and hope against hope. For want of the requisite elementary knowledge of which they were in search, partisans ridiculed the systems of each other with keen and unsparing bitterness. And after ages of philosophical strife, without a parallel in the history of mankind, they all virtually, on quitting the stage of life, announced their deep and solemn conviction, that until these questions were placed upon a firmer basis, the human understanding was doomed to perpetual doubt, and that human life in all its aspects, and with all its boasted knowledge and science, was nothing better than an illusion and a dream.

Such precisely was the state of the philosophic mind of the world at the Christian era. It was in the most disconsolate and forlorn condition. Every thing around it looked dark, impenetrable, and cheerless. There seemed an impassable gulf between its capabilities and its wants. Well; there suddenly appeared a theological system, which excited a surprising influence over the minds of those who espoused it. Though its

professed object was not to teach logical philosophy, yet it spoke of certain things, laid down certain principles, gave authoritative judgments on particular questions, and treated of the general mass of human knowledge and scientific evidence in a tone and manner altogether new to mankind. This religious creed was embraced by vast bodies of people, among whom the learned and the philosophic formed no inconsiderable portion. It extended from province to province, and from kingdom to kingdom. It changed the entire face of human society. It entered into an alliance with true knowledge and science of all kinds, which revolving ages have not only not weakened, but have rendered more indissoluble and lasting. It has in fact influenced, more or less, all the reasonings, the discussions, the argumentations, and controversies of mankind, from the first hour of its introduction to the present moment.

Now, why, and in what manner, has this been done? These are important questions to be answered. Let us just refer back to some of those primary doctrines which the Grecian sages considered as necessarily and essentially connected with every regular and formal system of ratiocinative philosophy. Among the number of these we recognise the important and interesting principle of a Divine Creator of the universe. This, Christianity affirmed in the most pointed and emphatic manner, was a true principle. Even the wisest and most profound of the ancients saw this grand truth, but "darkly, as through a glass." Then, again, we have the declaration, that this external universe, with all its manifold beauties and wonders, was actually made, such as we find it, by this supreme and intelli-

gent Being ; that this Being was really the centre of all wisdom, goodness, and truth ; that He made man a living and spiritual soul ; that good and evil were positive and absolute things or existences ; that what was good and true, vicious and false, relative to man, were likewise good and true, vicious and false, relative to his Maker ; that man was the object of God's benevolence and providential care ; that the soul of man was immortal ; and that it was possible for the human creature to form to himself certain mental conceptions of the things appertaining to spiritual life, and to another state of existence.

These were a few only of the elementary and general truths which revelation made known to the world after its own mode and fashion. And it is quite plain to demonstration, that these truths must have altered the entire framework of reasoning on every thing connected—no matter how remotely—with human nature, from the period they were received as canons of scientific thought among the civilized nations of the earth, till the present day. There can be no dispute on this point, I conceive, if we consider for a moment the intimate connexion which, from the nature of things, subsists between these primary truths and the science or art of argumentation, as this is developed in all the varied departments of human science and speculation.

The logical conclusions which the ancient philosophers arrived at relative to this entire question, strikingly shew us the general bearings and correctness of these remarks. They all saw, for example, that the doctrine of a Deity was of essential importance, even in reference to the mere dialectical forms of thought,

when these forms were tested by, and made to bear upon, the fundamental question of truth itself; for why should there be any thing lofty or engaging about truth—why an object of incessant inquiry and eager pursuit—or why should it be even truth at all—if there were no living and *intelligent* principle whatever in the universe—nothing save a mere series of material events fleeting before the outward senses of man? This was the question which all the ancient thinkers put to themselves; and it was just a question of that description on which, to men in their precise position, there would be divers and discordant opinions and judgments. But still the question never lost any of its inherent interest, notwithstanding the different solutions given to it. Every philosopher of any mark in the heathen world, saw clearly that he could make no progress whatever in any kind of rational knowledge—could move in no possible direction—could carry no argumentative train of thought, relative to human nature, to any thing like a satisfactory conclusion—unless this problem were solved in some fashion or other. A principle of *intelligent vitality* must be established at any cost, whatever might be the number and varied hues of these material or fantastical adjuncts with which the subtilty or the whims of man might clog or encumber it.

And the same observations apply to the great problems in morals. Why was a thing good or evil? or why, if these terms were merely expressive of the naked differences of things, or carried no ultimate results with them beyond the transitory feelings or perceptions of the present moment, did mankind attach

to them any importance at all? Why talked about, discussed, analysed, and moulded into the forms of a logical system? The answer is, that the ideal of the *good* stood upon precisely the same basis, in the eyes of the philosophers of Greece, as did the ideal of the *true*;—both must have a direct reference to some vital and *intelligent* principle; otherwise, to talk of this or that action being good or bad, moral or immoral, praiseworthy or blamable, was at bottom sheer folly and delusion. They viewed the mind of man in all its totality, and more especially directed their attention to that attribute of its nature which was immediately engaged in the pursuit and communication of truth; and, scanning this attribute from every angular position in which it could present itself to the understandings of men, they saw that it revolved, as on a fixed centre, upon the great and interesting truth, that there was in some unknown sphere of creation some living and active power, which inspired men with ideas on these topics, and forced upon them that indissoluble connexion which subsisted between what was true, and good, and beautiful, and the preservation of their own existence and happiness as human creatures. Nine-tenths of all ancient speculation are constituted of little else, save the constant efforts to penetrate into the secret connexion between what is called the science or knowledge of human nature, and the existence, attributes, and modes of government, of Him who was considered as the great author and sustainer of it.

Now, I am free to admit that there have been philosophers of great powers and reputation who have maintained, that this attempt of the ancient sages to

grasp and seize hold of the ultimate principles of all knowledge, was an unauthorized mode of proceeding, and was not sanctioned by any sound or rational view of the legitimate purposes or ends of all philosophical inquiries. This mode of argumentative interpretation, it has been affirmed, was their great besetting sin—the “slough of despond” into which they plunged themselves and their followers, and out of which they never could be extricated. Plato, Aristotle, and others, took too high an aim in their logical philosophy, and consequently fell short of their object. Had they confined themselves to the strict or naked forms of reasoning, they would have done good service; but, seeking to go beyond them, and to drag into open day certain mental conceptions but faintly shadowed forth in the intellect, they were continually kicking against the pricks, and enveloping the plain rules of practical reason in doubt and obscurity. Their views were unquestionably noble and imposing, but they were impracticable and visionary. Had they known, it is said, the modern rules and principles of philosophizing, they would not have fallen into this great error. They would have seen the folly and inutility of all such questions as they raised respecting a First Cause, the nature of the thinking principle, good and evil, and the like, and would have contented themselves with a simple collection of *facts*, and of pointing out the best modes of classifying and arranging them for general use and comprehension.

I beg to observe, that whether the philosophical method of the ancients was right or wrong, does not immediately concern the chief argument now under consideration.

Investigations into the legitimacy of this method will occasionally present themselves in subsequent parts of this volume ; but, in the mean time, I assume that this method which I have already mentioned, *was followed*—that it exercised a great influence on the Greek logicians who developed it—and that it was considered by them as being vitally connected with every mere *formal system* of dialectical and ratiocinative knowledge. It is therefore not necessary, for the establishment of the points I have in view, to prove the logical philosophy of the Greeks to be the very best that could be adopted. All I require is the *fact*, that they did pursue a certain line of argument and discussion on the abstract nature and influence of those principles on which they conceived their respective systems of logic rested. This is all that my position needs at the present moment.

By way of vindicating, however, the Grecian thinkers for the mode they adopted in throwing so many abstract questions into their logical theories and speculations, we may be allowed to make, in passing, a single remark on the subject. What they did was quite natural. Human nature, constituted as it is, could have suggested no other course. It was not a matter of choice with them, nor has it ever been a matter of choice with philosophers of any subsequent age, whether they had the power to check all inquiries into the first principles of knowledge. We must bear in mind, particularly on this occasion, that the science of logic is not a thing which possesses an independent existence, but is merely the exponent of all other subjects or departments of human inquiry which force themselves on the attention of mankind. This science takes especial

notice only of that which is *true* of every other science ; and it has not a body of truth of its own apart from other subjects over which it exercises an authoritative control. Consequently, it necessarily becomes a question of eager solution, how shall we discuss this or that kind of truth which presents itself to the understanding? How shall we test it, deal with it, communicate it, defend it, refute it, admit it, or make it an object of belief or principle of action? We can only do this by tracing it back in all cases to the sources from whence it springs. The mere *forms* of argumentation will teach us nothing ; they will not suffice to bring the whole truth before the mind, as it were, face to face. We are compelled, therefore, to fall back upon those fundamental principles or conceptions of the intellect from which such and such truths are supposed to be derived, or of whose existence and influence they are at once an explanatory and illustrative proof. Were the light of revelation again entirely withdrawn from mankind, and no remembrance of what it taught on particular philosophical points left among our race, the speculative part of man would have to travel precisely the same route as the heathen sages of old did. They would strive, but strive in vain, to obtain some rational and consistent theory on which to arrange such logical systems as necessity required, or curiosity prompted.

Reverting now to our original proposition, namely, the influence which the Christian system has exercised over the logical understanding of the world since its introduction, we shall briefly state that this influence has been both powerful and salutary. The modes in which it has manifested itself have been numerous,

and of a varied character, not susceptible indeed of very nicely defined limits, but sufficiently mapped out in their ordinary operation, as to enable us to classify them, in some measure, under general heads. A few of these we shall briefly advert to.

In the first place, the Christian dispensation deeply impressed the minds of men with the value and importance of truth. The sacred writings depict it in the most lovely and glowing colours, and represent it as one of the most conspicuous attributes of Deity itself. It is compared to the light, to the eye, to the soul of the world. It is affirmed to be intimately, nay necessarily, connected with happiness here, and immortality hereafter. Its pursuit is commanded to be the ever active impulse, and its acquisition the crowning glory of life. Both the precept and the spirit of the gospel tell us, that the love of truth is a powerful stimulus to all grand and noble enterprises. It is the genuine impulse to all impartial inquiry—of all effective communications from one mind to another—to all the charities, duties, and improvements of life. It comports more with a passionate thirst after real and useful knowledge, than with a petty and shallow curiosity. The glorious powers of speech are but tinkling cymbals without it, and the most gorgeous rhetoric a noisy and profitless waste of words. Wherever the love of truth reigns in the breast, it fires the whole man, and lightens up his mind for grand and useful deeds. It is the basis of the patriot's heroism and the martyr's renown. Without it the power of argument, the pungency of wit, the bitter severity of sarcasm, the exercise of dialectic skill, the pompous display of declamation, are but

the fleeting and evanescent shadows of unsubstantial realities.

Such are the sentiments on truth which revelation has inculcated into the minds of all its followers, since it was known to the world; and it is no unwarrantable assumption to affirm, that their power over the ordinary, as well as the philosophic mind of Christian societies, must have been great beyond all calculation in every age of the Church.

Christian doctrine has not only invariably represented truth, and an earnest and sincere pursuit of it, as objects possessing of themselves great innate beauty and interest, but it has hedged them around with a *moral* sacredness of inestimable value. We are not allowed to trifle with truth on any serious or important subject; nor do the principles of Christian ethics permit our playing the sophist, or of following any line of argumentation which has no other object in view than to produce a quibbling and captious spirit, or to foster feelings of indifference as to the value and extension of truth generally. All careless, apathetic, and latitudinarian opinions and practices on this point, are considered reprehensible, and are in direct hostility to the letter and spirit of the Christian scheme. What is foolish, as well as false, is prohibited and censured.

And of so much importance has the moral obligation of pursuing truth appeared to some modern writers, that the position has been formally laid down in philosophical treatises, and illustrated at great length, that man is responsible to his Maker for his belief as well as for his outward conduct. It is as criminal to think erroneously as to act improperly. Indeed it is one of

the plain and explicit declarations of the Scriptures, that man is responsible for his creed—responsible for his conduct in the pursuit of truth—responsible for his manner of promulgating that truth—and responsible, too, for the way and degree in which he allows that truth to influence his passions, feelings, thoughts, emotions, and judgments. And this varied responsibility is based upon the reason, that these Scriptures treat of things of unutterable magnitude and inconceivable importance to every human being. Examination, inquiry, a desire for information or knowledge, are demanded of every one; not a mere passing glance at, or superficial dipping into evidence and proof, but that full, active, unbiased, and candid train of investigation, which distinguishes the unfettered and unprejudiced mind. This alone can discharge the full weight of obligation to seek and to know that which is true. The very nature of revelation presupposes this obligation, and is inconceivable without it.

We come now to glance directly, though briefly, at the great principle of *authority* itself, which has exercised, since the introduction of the Christian code, such a vast influence on our modes and maxims of reasoning, both scientific and formal, and with which principle the preceding remarks have an obvious connexion. The doctrine of authority was not unknown to the ancient philosophers, but with them it had no firm basis on which to rest. To give credence to the statements and declarations of others, and to constitute this dependence on their veracity and judgment, an active principle in the government of our own understandings and conduct is an original or primary law of human

nature, the end or purpose of which must be obvious to the most ordinary capacity. Without it, there never could have been any decided progress in knowledge whatever, beyond the mere progress of the individual himself. The information of one age could never have been transmitted to another. But this original power of the mind is susceptible of important and beneficial directions, and can be strengthened, weakened, regulated, expanded, and moulded to a prodigious extent, by other and extraneous influences. And this is the reason why it plays such an important part in the history of the logical and philosophical understandings of mankind.

Every Christian community places itself in a logical position, and takes its stand upon certain abstract and philosophical principles and truths; and it decidedly and unhesitatingly takes the initiative in all questions which come before it for rational discussion and adjudication. The liberty of thought and argument which it proclaims and allows, is not of an absolute, but conditional character. It does not empower its members to speak, to discuss, to argue, and reason as they please: this has never been allowed since Christian societies were instituted; nor does it seem a likely occurrence, that such a measure of liberty of discussion will ever be meted out in any country where the Bible is upheld and revered. The fact is, that *intellectual* liberty is apt to run into "licentiousness," as well as social and civil liberty; and hence the necessity of some stringent checks upon the movements of the former as well as on the latter. To exercise the reasoning faculties in any way, or on any subject we think fit, is

a liberty which we can only enjoy under special and conventional sanctions. More than this no country can possibly allow; and it may well be questioned whether a right to absolute and indiscriminate discussion can be exercised in any state of human society, however rude or barbarous.

The question of ecclesiastical authority, viewed in relation to logical philosophy, opens out a wide range of topics for our special contemplation. This authority may be considered under two aspects—internal and external. The internal influence manifests itself much in the same way as we have just noticed, in its indirect control of the judgment, and in the modifications of our sentiments, opinions, and decisions on matters of moment and interest. We are swayed in this manner in every direction, and to a great extent. And the more numerous the religious sects of any country are, the more is this internal or secret power over the logical forms and conclusions of the understanding brought into operation. The various shades of opinion on fundamental doctrines of faith and practice, the different systems of church government, and the diversities of rituals and observances, naturally give rise to nice discriminations of the judgment, and introduce into social and religious communities an entire code of logical and argumentative canons, with a view of smoothing down the angular prominences of sectarian bitterness and strife, and of giving a free currency to the courtesies and amenities of human life.

The external manifestations of the principle of ecclesiastical authority are of a more bold and decided character than the internal, and may be viewed in a

twofold light ;—as expressions of public opinion, and as rules or principles of legal and judicial prohibition.

The force and influence of public sentiment or opinion have been powerfully augmented since the Christian era. They have also been more concentrated and uniform in their operation, in proportion as compulsory prohibitions have become less numerous and severe. The very liberty of thought which has been allowed to the philosophic mind of society at large, has added both to its power and to the refinement and spirituality of public censure and reproof. The authority of public opinion has become a natural element of the social intellect,—pervading all its minutest movements and inclinations, and guiding and moulding its logical conclusions in conformity to certain pre-established doctrines and principles. This species of authority is sufficiently yielding and plastic as to allow great latitude of thought and discussion ; but there are limits to this indulgence, though not susceptible of practical definition, beyond which it is not permitted that any member of society should pass.

All the great and interesting branches of science and inquiry, and more especially those in which logical forms and rules are most indispensable, are conducted in every Christian state under the absolute control and supervision of this public opinion and authority. The sciences of politics, morals, mental philosophy, and theology, taken in their widest acceptation, where logical principles and forms constitute such essential elements in their development and elucidation, afford striking illustrations of the extreme and sensitive vigilance which is exerted by the community over the

modes of investigation pursued by the cultivators of these several branches of inquiry; and how intensely anxious the public mind becomes, that there should be found no conclusions of the philosophic judgment, save those which are in strict and lofty harmony with the leading principles, doctrines, and usages of theological truth.

In questions relative to political science, for example, it not unfrequently happens, that some particular principle of that science is prominently brought before the public eye, and gives rise to long and animated discussions. If the principle in question should be carried to its full or ultra-logical consequences—and if these consequences appear to militate in any degree against some other general principle or canon of theological or philosophic truth, which the community at large have previously incorporated with their established creed—public opinion then makes her voice heard; calls back with potent authority the disputers to first principles; puts an end, perchance, to the discussion; and pronounces either for a total rejection of the obnoxious principle in question, or such a modification of it as shall comport with certain other elementary and vital truths which constitute the established faith of the country.

Thousands of instances illustrative of such proceedings might be gathered from the legislative assemblies of every country in Europe. Indeed, it seldom happens that a single session of the British Parliament passes over, which does not offer some pointed confirmation of this mode of dealing with public questions. And the same thing may be affirmed relative to philosophic

books and treatises on all the sciences we have just enumerated. Public opinion displays here, too, its power in the most effective and absolute manner. Every work of this kind, as soon as it makes its appearance, is immediately tested by certain abstract principles of philosophy and theology ; and if found to run counter to any of these, in an essential degree, it is forthwith censured, and ultimately repudiated by the entire community. In fact, the logical understanding, in every movement and manifestation it assumes, is laid under a solemn and imperative interdict ; and it is only by a tacit acquiescence in the truth of certain elementary principles of human knowledge that its exercise is tolerated, and the result of its labours become in some measure appreciated, and introduced to public favour.

Even physical science itself, apparently so far removed from some of those principles of abstract thought which mingle themselves with the sciences of human nature, is not altogether removed from the influence of the philosophy of Scripture. The logical arrangements and systems of material inquiry have invariably been scrupulously watched, lest any thing might creep into them inimical to one or more of those fundamental maxims on which the Divine record rests. That Christian communities have been, and are even at this moment, jealous to a high degree on this point, is a truth which cannot be disputed. The logical arrangement of facts, the classification of principles, the construction of theories, and indeed the whole framework of what is termed the *philosophy of induction*, bear evident marks in their history of the influence of ecclesiastical authority. And it is little better than a naked truism to declare, that,

however splendid a philosopher's reputation and fame, and unbounded his knowledge, he has it not in his power to rear any regularly concatenated system of material philosophy—to give his opinions any logical weight in the world of letters—totally irrespective of those general mental principles on which the Scriptures are grounded. He cannot take a first step in any direction towards such an object without their aid, countenance, and support.

When, however, public opinion becomes outraged, and is no longer able to check what the community consider as licentious and injurious discussions and reasonings, either of a verbal or written character, we immediately see the manifestation of penal authority. This species of coercion has existed in every country since Christianity was incorporated with state affairs. Though this power of bodily punishment has been gradually diminishing in most nations for a long time past, yet none have entirely renounced it. We seldom now take away liberty or life for opinion's sake; but there is still a measure of punishment meted out to every obstinate and perverse reviler of the established creed of a whole people. And it seems to me a difficult thing to conceive, how penal exercises of authority could be entirely dispensed with, as long as Christianity forms "a part and parcel" of the law of every civilized country.

Now, viewing the principle of authority in all its phases, we cannot fail to recognise its prodigious influence over the logical and philosophical mind of mankind. It compels them to pay a respect and deference to certain primary and vital principles of human specu-

lation. It places a complete barrier on absolute liberty of thought and argumentation; and by reason of its connexion, directly and indirectly, with all the civil, political, and social institutions of a country, it exercises in the outset of life that portion of influence over every rising generation, which is generally effective in checking any violent infringement of its rules and commands. All the avenues of instruction and education in every state, are placed under the absolute control of this Christian authority. Universities, colleges, public and private schools, and seminaries, are all regulated by its injunctions; and the entire mass of human knowledge, both practical and speculative, is pervaded in even the most minute sections of it, and to its very heart's core, with that restraining and directing power which the declarations of the Christian code possess.

The sacred writings have also exercised a powerful influence over the logical and philosophical mind of Christendom, by the inimitable conciseness and the simplicity of their statements. Being far removed from every form of dialectical abstruseness and mystical subtilty, and presenting principles and maxims of such a logical cast as to meet the wants and satisfy the curiosity of every state or grade of intellectual advancement, a steadiness is imparted to the mental movements of mankind which nothing but these writings could supply. It is chiefly from this cause, that when we cast a cursory glance over the controversies and argumentative conflicts in which men have been engaged for centuries, we so readily recognise that principle of order and uniformity which every way pervades them. Whenever controversial intemperances and

excesses have broken out, they have immediately been corrected by an appeal to the letter and spirit of the Christian canons of argumentation. The wars of the mind, like the wars of the body, have been stripped of their most revolting features, by the conciliatory and candid spirit conspicuously displayed in the Christian profession.

The inspired volume is the great book of human nature, where all its intellectual principles, and moral springs of action, are displayed with surprising accuracy and distinctness. The entire man—body and spirit—is here portrayed in every conceivable position, and under the influence of every conceivable motive. As the science or art of logic has the great field of the inward man for its exclusive display, and as its maxims and rules call into requisition nearly the whole train of intellectual faculties, and exercises moreover a reflex effect upon his moral affections and sensibilities—we can perceive at once, that such an inspired record, from its very fulness, completeness, and universality, must be an important instrument for guiding the reason of mankind, and pointing out those paths they ought to take, amid the perplexing labyrinths that surround them.

It may be alleged that this authority and influence of the Scriptures over logical science, are altogether indefensible; that they tend to circumscribe and fetter the human mind; and that they proceed upon an erroneous principle, relative to the nature and purposes of human knowledge. To these statements I need offer no direct arguments at the present moment. It is only with the *facts* of the case I have here to do

—to attend to these in a historical sketch is all that is incumbent upon me. Whatever opinions some philosophers may entertain as to the authenticity or value of the Bible, the facts of its influence over the reasoning faculties of mankind cannot be doubted. They stand out in prominent relief in every page of history since the Christian era. To those who question the legitimacy of theological influence over the logical understanding, we must refer them to subsequent portions of this treatise, which will develop reasons and statements bearing directly on the abstract merits of the entire question.

In bringing those general observations to a close, we beg to remind the reader, that the chief source of all this direct and indirect theological influence over logical systems, both theoretical and practical, arises from the fact, that the Bible pronounces authoritatively and uncompromisingly on the truth and reasonableness of certain mental principles—which principles lie at the root of every system of rational logic or argumentation. The intimate and necessary connexion subsisting between the theoretical and practical part of logical science, was clearly seen by the heathen world; but its philosophers and logicians had no means or power to develop that connexion in such a way—to encircle it with such safeguards, and to enforce it with such penalties—as to constitute it an active and ever-living element in the understandings of mankind. These logical philosophers were powerless for such a task, although they clearly saw that it was requisite to be undertaken and executed before the great object they aimed at could possibly be attained. This

important truth is confirmed by arguments, both abstract and historical, the most convincing that can be presented to the mind of man. Christianity came to the rescue, and has placed upon record certain facts and opinions relative to the nature, operations, and purposes of human reason, which are found, by large classes of the most intelligent and refined of our race, to remove much of that haziness and obscurity which bedimmed the intellectual vision of the sages of antiquity. And the more fully these facts and opinions are understood, and the more universally they are applied to the scientific elucidation of every species of knowledge, in the same proportion are the boundaries of that knowledge extended, and the greater and more widely disseminated are those advantages, to all classes of society, which it is calculated to confer.

CHAPTER V.

LOGICAL WRITERS FROM THE CHRISTIAN ERA TILL THE
TIME OF CHARLEMAGNE.

THE logical writers of this period of history may be classed under three divisions—*The Fathers of the Church* ; *The Alexandrian School, or Latter Platonists* ; and, *Miscellaneous Authors*.

THE FATHERS OF THE CHURCH.

The logical speculations of the Christian Fathers, furnish innumerable illustrations of those principles of mental philosophy which abound in the Scriptures, and which we have in the previous chapter endeavoured to point out. These writers took the volume of inspiration in their hand, and discussed all subjects of human inquiry through its medium and spirit. They were the first who openly declared for the moral obligation of pursuing truth, and for bringing it before the minds of all men, irrespective of their fortune or condition. The science of reasoning in their minds involved a serious and imperative duty ; and the interests of the human race, both here and hereafter, was necessarily,

in their opinion, connected with the way and manner in which that duty was discharged. As they were expounders of a new system of theology, which had to contend with numerous and formidable difficulties, they had to deal directly with the understandings of men; and, consequently, all legitimate and effective logical appliances were indispensable instruments to their calling. They may be considered as the greatest of all logical reformers and theorists—inasmuch as they zealously and successfully laid the foundation of all those broad principles of thought, connected with the nature, offices, and ends of truth, without a knowledge of which the civilisation and improvement of mankind could neither have been exemplified nor secured.

It may be stated as a fact, which the general testimony of ecclesiastical history sufficiently attests, that the logical principles of Plato were, up to the fifth or sixth centuries, decidedly preferred by the fathers of the Church to the writings of Aristotle. The reason for this preference was, that Plato's philosophy, as connected with the abstract nature of truth, and the rules of evidence, was more in accordance with that which the Scriptures developed. The Platonic theory embraced more elevated views of moral truth, of a Divine government, and of a spiritual principle in man, than were displayed in the writings of any other of the heathen sages; and these doctrines the Fathers considered as eminently corroborative of the importance which revelation attached to truth generally, and to those means in particular by which it could be attained. "I find," says Justin Martyr (99 A. D.), "powerful and inexpressible charms in the spiritual notions of

Plato; and the contemplation of his system of ideas carries my mind toward grand and lofty topics." St Athenagoras says (172 A. D.), "Plato contemplated, with a lofty stretch of thought, that eternal intelligence and divinity which *reason* alone can combine."—"The *idea* is the first erection of the celestial Ruler; it is the type of all creation."

And it may be incidentally remarked, that, in viewing the Grecian logical systems as a whole, the Fathers of the Church were deeply impressed with the idea, that these systems were evidently designed to prove confirmatory of the abstract truths of the Scriptures; inasmuch as these Grecian speculations shewed how far, and in what manner, the unassisted mind of man could advance in the path of scientific truth. We see, said the Fathers, the great speculative difficulties which lay at the root of all their logical principles and forms of evidence, and how totally unable the heathen sages were, notwithstanding their splendid powers and consummate refinement, to grapple with any one of them, so as to disentangle themselves from the jungle of perplexities in which they were doomed to spend their entire existence. Had we not had this notable example of man's innate speculative impotence so pointedly brought before us, one of the most powerful proofs of the truth and lofty origin of our creed would have been wanting.*

In the *apologetical* writings of Justin Martyr, Tertullian, and others, as well as in those treatises compiled for the purpose of demonstrating the general credibility of the gospel history, we have the first-fruits of

* See the Histories of Du Pin, Lardner, Mosheim, and Cave.

the application of the logical philosophy of the Bible to the everyday purposes and reasonings of human life. We see the art of argumentation displayed in a manner not to be witnessed in any previous ages of mankind. We see here continual and stirring appeals to the innate feelings of men—to their general notions or conceptions of right, justice, virtue, vice, &c.—to those principles of common sense diffused among all ranks of men—and to all those constitutional and necessary checks and safeguards which keep controversies and discussions within certain prescribed and commendable limits. The logical displays which the purely theological writings of the Fathers exhibit, or those beneficial effects which indirectly flowed from them to human inquiry generally, we make no mention of here, because these writings stand upon different grounds. But to those which are specially directed to the world at large, and treat of matters and things on which men of all ranks and stations can form an opinion, we owe very great obligation. They were the pioneers or forerunners of that enlightened system of philosophical and candid discussion and inquiry, which, both in its spirit and letter, has descended down to us unimpaired to the present hour.

Justin Martyr (A. D. 90), one of the first of the Fathers we shall notice, is a striking example of the logical influence of the sacred writings. One of his first efforts, after he became acquainted with the Christian system, was to obtain clear and concise notions of the elements of human reason. He saw the necessity of searching examinations and inquiries, and he steadily

directed his attention to those rudimental conceptions which lie at the root of all rational argumentation. He was well acquainted with the philosophical thought of Greece, and he was not slow to recognise what were the chief stumbling-blocks which lay in the way of the most eminent philosophers of that country, in forming just opinions on the nature of truth generally, and of those particular laws of the human mind by which it can be obtained and conveyed to the minds of others. This led him to grapple with the philosophy of logic—with those primordial principles—imbedded as it were in the intellect of mankind. He scanned the various logical systems of the Pythagoreans, the Sophists, the Peripatetics, and Stoics, and found them all more or less imperfect in the correct conception of *the true*, as well as in that of the purposes or ends of all rational investigation. St Justin was deeply impressed with the solemn duty of examining into all truth; and he was equally impressed with the conviction, that without men set out, in their inquiries after it, from sound and rational starting-points, they could never hope to obtain it. These starting-points are developed in the Scriptures, and are to be found nowhere else.*

Tatien (A. D. 170), who was a disciple of Justin's, followed in the footsteps of the master relative to his opinions on the nature of truth, and of the powers of the understanding in pursuing it. Tatien held that the reason of man was the supreme and loftiest faculty of the soul; that it was Divine in its origin and character, and could be considered as a logical instrument in

* *Apologia*, §§ 5, 15. *Dialog. cum Triph.*, §§ 218, 219.

no other light, except in subjection to, and in harmony with the creative power of the universe.*

LOGICIANS OF THE ALEXANDRIAN SCHOOL.

The students and philosophers of this famous seminary of learning, were of all nations and professional pursuits of life. And hence it is that we are obliged to treat of both lay and clerical writers under one and the same division.

The general doctrines, it may be remarked, which were here taught, were of all imaginable complexions. We have the mysticism of the East, the Grecian speculations, and the Christian system, blended into one mass; and the consequence is, that we find the logical systems emanating out of this Eastern sect of speculation of every description, both as to abstract principles and formal classification. We shall notice these writers or teachers of logic whom we know received their academical instruction here, totally irrespective of their professional character or mode of life.

St Athenagoras (A. D. 170) was one of the Christian Fathers who received his education at Alexandria. He maintained, that though the faculty of reasoning is essentially the same in all mankind, yet it is indispensable that it should be under the guidance of some superior influence to reap the happiest results from its exercise. Unless it be based on theological principles, it must fall a prey to the most wild conceits and irrational crudities.†

* *Contra Græcos*, §§ 12, 26, 31, 32.

† *Legatio pro Christianis.*, §§ 5, 6, 8, 15, 19.

Plotinus (A. D. 206) was an able and scientific logician, but enveloped his principles and rules of reasoning in abstruse and mystical speculations. "The human mind," says he, "has two modes of acting and knowing—the one by a participation in the principle of intelligence, and the other by dialectic or logical forms. It enjoys the former when filled and illuminated with this high and refined intelligent influence; and the second is enjoyed through the means of certain outward characters or signs, and laws of the mind imparted to our natures. All the rational forms of things are imprinted on the mind by our Creator."

St Clement (A. D. 218) was another distinguished Father of the Alexandrian school, and one who entered profoundly into all the philosophical questions of the day. He defended the rational use of dialectic or logical forms, on the general ground that they served as species of bulwarks against the attacks of sophistry and unbelief. "The cause of all error," says he, "and false judgment is, that we cannot detect the reasons on which the accordance or differences of things amongst themselves are founded; and we thus erroneously classify matters together which ought to be separated. It becomes necessary, then, to apply the art of dialectics as a useful instrument to conduct us to truth, to enable us to demonstrate it to others, and to protect and defend it from captious argumentations. But we must guard against the abuse of this dialectic art."

The necessity for this precaution is forcibly pointed out in that portion of the writings of St Clement, in which he treats of the logical connexion subsisting between faith and science, and in all those rules which

guide the understanding in every rational investigation or inquiry.*

N.B. Porphyry (A. D. 223) was one of the most subtle logicians of his age. He was the author of a work on the *Predicables* of Aristotle. His chief aim is to give an analysis of the notions we attach to particular generic terms of reasoning; such as *genus*, *species*, *accidents*, *contrariety*, *identity*, and the like. "Genus," says he, "is the principle which contains the species and individuals placed under it, and involves the idea of multitude or number. If *genus* and *species* possessed each a separate and independent existence, or were two distinct and separate notions of the intellect, then on the first supposition they would have a corporeal existence; and on the second, they would be of an incorporeal nature, for they would be separated from sensible or external things."

There were several Fathers of the Church, as Hermas, Tertullian, Arnobius, Irenæus, and Lactantius, who entertained opinions that logical pursuits, especially when viewed through a scientific medium, were generally inimical to the interests of revealed religion. Hermas wrote against the Pagan systems of philosophy; and Irenæus against the Gnostic speculations. Tertullian disliked the system of Plato, and considered the Academic mode of reasoning as destructive of all true science and wisdom. Logic, in even its most simple or formal shape, fell under the displeasure of Arnobius, who maintained, that with all its display of methodical arrangement and demonstrative conclusions, it was a very imperfect instrument for guiding us to truth.

* Stromat., lib. i. Ed. Paris, 1641.

Lactantius followed in the same strain. "That portion," says he, "of philosophy which we call logic, is that which contains dialectics and the rules of reasoning. The Divine reason has no need of any such assistance: it resides not in the form of words, but in the heart, and it is of little moment what language we employ; for it is things we seek, and not words."

St Augustine (A. D. 354) entered into many speculations on the nature of truth, and the laws of the mind employed in its acquirement and promulgation; but his views are so much blended with other topics relating to mental and theological philosophy, that we cannot readily separate the purely logical from the general mass of his writings. In his work, "*Against the Academicians*," he descants on the value of logical philosophy, and on the importance of cultivating a love of truth; and examines at considerable length, and with much care, all those general principles of the mind on which scientific evidence appeared to him to rest. In his opinion, every form of scepticism is self-destructive; for the bare suggestion of a doubt is a proof that there is such a thing as truth in existence.

○ Proclus (A. D. 409) endeavoured to change the entire framework of human reason; but his logical views are so intimately blended with his theology, that we can scarcely separate them for especial notice. He cultivated the Greek logic, but founded upon it the Eastern ideas of illumination or intuition; and this led to almost impenetrable darkness and mysticism. The human mind, according to Proclus, may be viewed under two great categories—identity and diversity. These purely primordial forms give rise to three other

principles—harmony, unity, and similitude. These three produce by their individual, as well as concentrated influence, all the forms and entities which are displayed in the dialectic or logical processes of the human understanding.

The Platonic logic was the great idol of Proclus. With him reasoning was the loftiest and noblest faculty of the mind. In his *Elements of Theology*, the reader will see in what manner he has attempted to develop the entire system of Platonic speculation.

Synesius (A. D. 410) and Claudianus Mamertus (A. D. 450) were both able expounders of the logical system of Aristotle. Ammonius, the son of Hermeas (A. D. 470), was the author of a book on the Categories,* in which many observations will be found connected with the nature of classification and definition generally.

MISCELLANEOUS WRITERS ON LOGIC.

The logical scepticism of Pyrrho was again revived by Ænesidemus and his followers. In the second chapter of his work on the doctrines of the Academicians, he treats of truth in general, and of those questions necessarily connected with its investigation; such as causation, action, chance, motion, production, destruction, and the like. All his observations and reasonings on these points tend towards impressing the mind with a feeling of doubt and mistrust, even as to matters the most familiar and certain.

Agrippa was the successor of Ænesidemus, and laid down five maxims relative to truth, which he considered

* Edit. Venice, 1506.

were in some respects original. The first maxims appertains to those differences which are to be found in all the schools of philosophy on fundamental propositions; the second embraces the notion of infinity involved in every chain of argumentation; the third relates to the uncertainty we experience relative to the nature of all external objects; the fourth maxim points out the errors arising from our hasty or purely gratuitous mode of reasoning; and the fifth maxim indicates the common method of arguing in a circle.

Favorin was a native of Arles, and considered one of the most profound as well as popular logicians of his age. He was enthusiastically attached to the entire doctrines of Pyrrho. Galen was his antagonist, who remarks, "that some recent writers, and among the number is Favorin, carry their doubts to such a pitch as to call in question the existence of the sun."

Sextus Empiricus is, however, the most able and voluminous writer belonging to this sceptical school of logic. This author remarks, that nearly all the philosophers who had preceded him had laid down three principles or standards of truth, or rather three instruments for the discovery of truth and falsehood. The first is the natural judgment of man; the second the means he takes of exercising that judgment through his senses and understanding; and the third is that action or power by which he applies these objects or instruments. The first standard he discards on account of the compound nature of man, possessing a body and a soul, which organization must needs give rise to many inward operations of thought and action which can never be accurately known. The second criterion is

refused because the impressions on our outward senses are variable and conflicting. The third principle is in like manner rejected, on account of doubts springing out of our organs of vision.

The impossibility of man recognising truth under any circumstances, results, according to Sextus, from three leading considerations,—1st, The mind itself; 2nd, The objects with which the mind is occupied; and, 3d, The relations which subsist between the mind and these objects, or between the subject and the object. The author's arguments may be arranged under three heads or divisions.

1st, Relative to the mind, the subject of knowledge, we have sensations and conceptions. This division of our mental nature embraces fundamental principles of doubt; for sensations and conceptions are logically antagonistic to each other. The treatment of the mind under this point of view, has given rise to the respective theories of the ideal and the sensual. Again, if we ever take sensations and conceptions separately, the result ends in doubt. Sensations are opposed to each other, and likewise conceptions; so that we are hemmed in on every side, and cannot know what to believe or not to believe.

2nd, With respect to all external objects it is impossible to understand their nature, fully and adequately, unless we can comprehend, and take within the mind's grasp, the entire mass of relations subsisting among them, and all their individual properties of every kind. In the world around us, we have to grope our way among its phenomena by the help of signs, and we are, in numberless cases, not able to distinguish even one

sign from another. The simplicity and the diversified character of objects, give rise to constant doubt and misgivings.

3*d*, When the objective and subjective relations of things are duly considered, another wide field is opened for sceptical conclusions. Sometimes the mind acts by intuition, and totally irrespective of formal or artificial combinations of ideas; and at other times again it is discursive, and conspicuously unfolds those laws of mind which logicians more particularly attend to.

When human knowledge is considered logically, as combining certain perceptions and conceptions according to artistic rules, man proceeds to treat of certain things called definitions, categories, and arguments. These create confusion in minds. Definitions of all kinds are entirely useless. He who makes a definition must be in a position to know every thing that can be known of the thing defined. If definition is to be applied to one thing, it must be necessary in all; and thus the mind is perpetually whisked round in a complete circle, without coming to any fixed point. If, on the other hand, we can dispense with definitions in any one case, why not be able to dispense with them in all?

All categories, such as *genus* and *species*, are useless, one-sided, imperfect, and often completely false. If we consider them as purely mental conceptions or controversies of the mind, how can we determine their relation to external things? For any thing we know to the contrary, the mental instrument may have no real or true relation whatever to the thing on which it operates.

Argumentation, Sextus states in substance, combines general propositions with particular ones; but, on the one hand, it is requisite to set out from individual objects in order to arrive at an universal truth; and, on the other hand, we must rest on universal propositions when we are desirous of proving the reality of individual objects. All reasoning and logical trains of thought, rest upon a basis of particular things admitted to be false—to run in a vitious circle; and the mind cannot arrive at truth, because it requires an examination of the individual objects, without any limitation or exception, included in the universal proposition; and, consequently, a process of sound and infallible reasoning, on any thing whatever, is manifestly impossible for man to accomplish.

These are the leading points in the logical scepticism of Sextus. It need scarcely be remarked that universal scepticism is a thing inconceivable. It also militates against every feeling and principle of our nature. The mind revolts from it as it does from the notion of annihilation itself.

In the sixth, seventh, and eighth centuries, there were several writers and expounders of logical science of note and reputation. Martin Capella wrote on dialectics. The celebrated and unfortunate Boethius translated the *Categories* of Aristotle into Latin.* Cassiodorus wrote several dissertations on the logical system of the Stagyrte, which were used as text-books in some of the schools in the East for a considerable time after the death of the commentator. His views

* “Explicatio quorundam Vocabulorum ad Cognitiorum Dialectica conducentem, et Introductionem ad Logicam Aristotelis.”—Toliti. 4, 1616.

are contained in the treatise "*Rhetorica Compendium*," wherein he lays down the leading principles of logic, and also combines them with matters strictly appertaining to rhetorical subjects. Later down the stream of time, we have John the Grammarian discussing logical systems, as well as St John Damascenus, who makes the following remarks on method:—"There are four dialectic or logical methods. The first is the division which separates genus and species; the second is that which defines the subject by the genus; the third is analysis, which decomposes every part; and the fourth is demonstration, which establishes the truth by means of the last term." This author also distinguishes analysis by three different characters or signs—natural, logical, and mathematical. The first resolves compound ideas into their simple elements; the second resolves the syllogism into its component parts; and the third consists in the admitting the correctness of a given principle, in order to arrive at a knowledge of an important and unknown truth.

Isidorus of Seville, in his "*De Arte Rhetorica*," enters at some length into logical disquisitions. The abstract nature of propositions in general, and the doctrine of the syllogism, are both dwelt upon. He divides his subject into two leading portions; that which is strictly rhetorical, appertaining to the use and choice of words; and that which is dialectical or logical, and relates to ideas and their formal combination.*

Following this writer, we have some logicians of distinction in the latter period of the Byzantine empire. George Pachymera wrote a *Compendium of Logic*;

* Paris Edit. 1549, pp. 67, 382, 341.

Theodorus Metachita stood as the head of a school for logic and eloquence at Constantinople; and Magentinus, George Cyprius, and Michael Psellus, are commonly known as assiduous cultivators of logical studies. David, the disciple of Leon the philosopher, wrote on the *Categories* and *Predicables* of Aristotle, and Blemade composed his *Epitomes of Logical and Physical Science*.

Pelagius, a Syrian by birth, but connected with Spanish affairs, wrote on general logic and the art of reasoning. He flourished in the eighth century; and in the after period of his life lived as a solitary hermit in one of the wildest and unfrequented parts of the kingdom of Spain. He appears to have been well acquainted with the works of Aristotle.

Logic, he maintains, is conversant about three things; the nature of the human understanding, the nature of truth, and the method of investigating and communicating that truth to others.

There are three acts of the mind more immediately involved in every logical operation—perception, judgment, and reasoning. There are also three other faculties necessary to argumentation; namely, comparing, naming, and ranging our ideas.

There are two sources of error which vitiate our logical conclusions on many subjects of interest and importance—authority and precipitancy. The first induces us to reject an opinion without thoroughly examining it; and precipitancy induces us to follow a like course, by making us content with a very superficial examination of the evidences on which certain opinions rest. Added to these two, there is also a

spirit of contradiction which is inimical to our progress in sound and rational knowledge.*

Alcuinus (Albinus Flaccus) was an English prelate, who was the principal agent in the establishment of the public schools founded by Charlemagne towards the termination of the eighth century. We have Alcuinus' system of logic, which he divides into two parts—dialectics and rhetoric. His mode of arranging the materials of dialectics, is precisely the same as most of the treatises we have on this subject at this period of history.†

The eight centuries we have just past over, present on the whole but a dark and checkered aspect when viewed in connexion with the progress of rational knowledge and science. The good work of improvement, however, was here commenced. This was the epoch of the regular consolidation of European society. The seeds were sown which in after times were to yield a fruitful harvest. The true foundations and limits of human inquiry were distinctly, though somewhat roughly, sketched out. A mortal struggle between heathen speculation and revealed truth had been brought to a successful termination; and the human mind, for the first time in its history, had for its guidance a solid, though still limited code of logical canons for all matters of deep and general interest. Speculations on the nature of truth became more rational and concentrated. Christian institutions were now being consolidated, and beginning to impart a steadiness to men's minds of incalculable importance

* See *Los Padres del Disierto*. Madrid, 1564. Vol. ii. Art. St Pelagius.

† See *Dialectica et Grammatica*. Folio, p. 487.

to the future intellectual movements of mankind. The philosophy of Scripture made itself heard in every corner of Christendom, and was day after day chasing away the clouds of mystic fanaticism and ignorance. Theological doctrines were silently yet steadily forming the basis of public opinion; and their intimate relations with numerous philosophical questions, which they touched at all points, were constantly becoming more clearly ascertained and defined. The remarkable harmony which the Christian scheme exhibited between the world within and the world without—the subjective and objective existences of logicians—was of such a character as to satisfy, in a great measure, the minds of speculative men, and to induce them to make the leading principles of that system their common textbook in the investigation and promulgation of truth.

CHAPTER VI.

ON THE ARABIAN AND JEWISH WRITERS ON LOGIC, FROM
THE NINTH TO THE THIRTEENTH CENTURY.

WE cannot, in a historical sketch of logic, omit a short notice of the Arabian and Jewish writers on the science. The former, in particular, paid great attention to it, and have left indelible proofs of their ingenuity and fervour of zeal in this direction, even to the present hour.

The Arabian logical philosophy, taken as a whole, is a compound of three leading ingredients—the Scripture doctrine as to the nature of truth, the Grecian dialectics, and the theories of the New Platonists. A knowledge of the general philosophy attributed to the Arabians, is said to have been chiefly derived from the teachings of some distinguished Christian thinkers, such as John Philoponus, Mesne of Damascus, Hormian, and others. It was through this channel that the writings of Aristotle and the commentaries of the New Platonists were conveyed to them about the commencement of the ninth century, and which imparted such a powerful stimulant to their speculative subtilty and dialectic skill.

Alkendi, a native of Bassora, a city on the Persian Gulf, flourished as a philosopher at the commencement of the ninth century. He wrote various treatises on the *Categories*, the *Predicables*, the *Sophisms*, and other divisions of logical science. He likewise paid great attention to the nature of mathematical evidence, and regarded it as a very necessary preliminary study to philosophy in general.

Alfarabi was a logician of unrivalled skill and talent. He studied at the city of Bagdad, under John Mesne; and the character he bore from one of his contemporaries, testifies "that he penetrated the very depths of logic, revealed its secrets, and facilitated the understanding of it. The writings which he composed are filled with clear observations and acute conceptions."

Alfarabi aimed at great achievements. He was ambitious of entering into the very arcana of nature, and extorting from her all her most hidden secrets. With the assistance of the formal dialectics of the Greeks, he essayed to develop the entire system of Oriental intuition, and to resolve all the problems connected with the moral and physical world. His tract *Upon the Sciences* forms a sort of dictionary, or methodical classification of various branches of human knowledge, embracing the leading principles of these several subjects of inquiry, and pointing out their logical connexion one with another. He places *Divine wisdom* at the head of all. "This science," says he, "demonstrates, that the objects embodied in this heavenly branch of knowledge raise the mind of man to the height of perfection. The ascending scale of his intelligence terminates at the first principle anterior to all

things; this is the primordial unity, which confers existence and design upon every thing we see. Truth flows from it as its only and proper source.*

The author's work *Upon the Understanding* relates more particularly to the connexion subsisting between logical forms and the ideas they represent, or to those processes of the intellect which are requisite for the full development of universal truths and propositions. These are not the results of any mechanical or elaborated process of the understanding, but arise out of it by virtue of its own innate vigour and spontaneity. Men can scarcely be said to be really cognisant of their existence, seeing that they display themselves so promptly and rapidly in every exercise of their rational powers.†

Avicenna was another distinguished Arabian logician. In his *Treatise on Logic* we find that he adopts the principles of Aristotle, but does not follow him slavishly. According to Avicenna's notions, "all knowledge consists in two things—representation and conviction. We may represent things to ourselves in various fashions, without, however, persuading ourselves of their truth. Representation is acquired by definition, or some such similar contrivance of the mind; but conviction is derived from reasoning alone." The author also conceived that there were certain general and distinct conceptions of the mind which lay at the root of all argumentation; and he cites the notion or idea of *being* as one of these. This conception of his own existence, and the existence of things around him,

* Alfarabi, *De Scientiis*. Paris, 1638, pp. 35, 36.

† *Opera*. Paris, p. 43.

is ever present to the mind of man. He cannot, for even a moment, divest himself of it.*

Algazeli flourished as a logician in the eleventh century, both at Bagdad and Alexandria. In some essential points he differed from Avicenna, particularly as to the mind's power to frame universal conceptions. All men have not the like power of recognising and using these universal ideas—inasmuch as Algazeli conceives that high notions of moral worth and intellectual refinement are indispensable to the attainment of a large measure of truth. The soul of man is as a mirror: it reflects the truth; but, in order to do this fully and faithfully, it is requisite that it should be pure and unsullied by vice and error. "The logical understanding," says he, "can perceive itself; it can perceive its own perception; it can perceive what it produces; it can pass from the strong to the weak, from the obscure to the luminous, without any essential change of its nature; it is strengthened instead of weakened by years. The derangement of the organs of sensation may act upon the reasoning faculty in two ways—by causing a distraction of the mind, and by depriving it of that assistance required for judging of external bodies. But still our intellectual power can, by virtue of its own innate energy, emancipate itself from this double dependence."†

The logical method of Algazeli has been charged with embodying a species of scientific scepticism inimical to all sound reason. His enthusiastic admiration of the Koran induced him to maintain that all truth

* See *Logique d'Avicène*, by Vattier. Paris.

† *Logica et Philos.* Cologne, 1506.

should be viewed through its pages, and be submitted to its authority. And, in order to establish this dogmatic position, he argued for the uncertainty and doubt which naturally hang around our powers of mental perception. The only true antidote against absolute scepticism was, in his judgment, to take shelter in the Koran.

In the middle of the twelfth century we have the doctrine of absolute logical intuition brought forward by Avenpace. He was a profound but mystical genius. He entertained a thorough contempt for dialectics of every form, which he considered a barren and stupifying branch of public education. Tophail, who flourished about the same time at Cordova in Spain, followed in the same mystical path. His work, *The Man of Nature*, is a description of a man who in infancy had been left in a desert, and nursed by a she-wolf; having no intercourse with mankind, but cultivating an acquaintance with nature by means of his unaided physical and mental powers. He is represented, as he increases in age, as going forward from one stage of mental contemplation to another, until he arrives at the perfectly intuitive, which rests upon Deity itself.

These fanatic opinions created a reaction; and many of the Arabian philosophers of lesser note and influence fell into a species of logical materialism, and considered all truth to be represented by, or embodied in mere formal technicalities and rules. The absolute scepticism to which these opinions naturally led, gave rise to a number of persons, professing the religious doctrines of the Koran, called *Talkers*, who devoted themselves, like the Greek Sophists, to mere dialectical

exhibitions. The entire secret of their exploits in this way, was by throwing all questions into obscurity, and by dwelling on both sides of an argument with equal earnestness and zeal. Truth with them was a *name* only, and nothing more.

This was the precise state of things when Averroes made his appearance. He was a native of Cordova in Spain, and flourished in the twelfth century. His grand aim was to give a right and powerful logical direction to the science of his age. He attempted to establish a species of eclecticism relative to the entire science of reasoning. Dialectical principles and systems were all at variance, and he strived to reconcile and harmonize them with each other. Being intimately conversant with the writings of Plato and Aristotle, and also with the dialectics of the Alexandrian school, he conceived there was a possibility of rearing a natural and consistent theory of truth out of the several discordant materials before him. With this view, Averroes maintained it was requisite to examine the primary foundation of all evidence. It was clear to him that nature herself distinctly pointed to two kinds of evidence or truth; to that which was *within* the man, and that which lay *without* him. There was an *intellect*, and there was a *soul*. The former takes cognisance of all truth as it is exhibited in universal or particular propositions; while the office of the latter is to recognise those relations which subsist among the several phenomena of the material world. The intellect is active, the soul passive. The former belongs to all men, although possessing the attribute of distinct individuality, and the latter constitutes that which is

individual in each man. The intellect is eternal and incorruptible, the soul corruptible and mortal. The union of the two principles is necessary to produce thought, as it is developed in man. What the universal intelligence is, the result of this combination, has been the subject of much controversy among the critics on Averroes' speculations. Some view it as a decided pantheistical principle, while others considered it as a species of logical dualism. The latter opinion is the more common of the two; and is supported by testimony from several works of the author, wherein he had to defend his philosophy against certain objections which the Mohammedan doctors brought against it. He seems to have been driven into a corner; and, to extricate himself, he maintained there were two kinds of truth—theological and philosophical. Theology is simply the expression of popular belief, and is only *relatively* true; it indicates only the outside of things. Philosophy possesses truth in itself; its principles and conclusions partake of the absolute.*

Mr Hallam observes, that the general doctrine held by Averroes was, “that there is one common intelligence,—active, immortal, indivisible,—unconnected with matter, the soul of the human kind; which is not in any one man, because it has no material form, but which yet assists in the rational operations of each man's personal soul, and from those operations, which are all conversant with particulars, derives its own knowledge of universals. Thus, if I understand what is meant, which is rather subtile, it might be said, that as in the common theory particular sensations furnish

* Averroes, Opera. Venice, 1660.

means to the soul of forming general ideas ; so in that of Averroes the ideas and judgments of separate human souls furnish collectively the means of that knowledge of universals which the one great soul of mankind alone can embrace. This was a theory built, as some have said, on the bad Arabic version of Aristotle which Averroes used. But whatever might have first suggested it to the philosopher of Cordova, it seems little else than an expansion of the Realist hypothesis, urged to a degree of apparent paradox. For if the human soul, as an universal, possesses an objective reality, it must surely be intelligent ; and, being such, it may seem no extravagant hypothesis : though incapable of that demonstration, we now require in philosophy to suppose that it acts upon the subordinate intelligences of the same species, and receives impressions from them. By this also they would reconcile the knowledge we were supposed to possess of the reality of universals, with the acknowledged impossibility, at least in many cases, of representing them to the mind.”*

The Jewish writers on logical science, particularly for the first ten or twelve centuries of the Christian era, exercised no small influence on the current of philosophic thought in the East, and in the southern parts of the European continent. It would appear from the edict of Augustus, in the year 15 B. C., to all the governors of the Roman provinces, that, though we have no account of the Jewish philosophers individually, they must have been held in no small note, both in Spain and the south of France. They occupied chairs of philosophy and logic in all the principal

* Lit. Middle Ages, vol. i. p. 193.

schools of learning in several of these provinces, and particularly in the cities of Cordova and Toledo.*

Abraham Ben Isaac was a logician of Toledo, of great renown. He was born in 1119, and, on account of his wisdom and profundity, was called the *Sage*. He wrote a work on logic, in which he adopts the leading principles and forms of Aristotle.

Jehudah Ben Thibon Marimon was born in 1134, and distinguished for his logical attainments. He translated into Arabic, and wrote commentaries upon, the entire works of Aristotle. R. Joseph Aquichi, born in 1190, followed Thibon Marimon, and adopted the same opinions as to the nature and offices of logic as those contained in the commentaries alluded to.

Among all the Jewish writers on logic, Moses Maimonides is the most distinguished. He was a native of Cordova. He is the author of a work on logic called *Miloth Higayon*. This treatise was originally written in the Arabic language; but, after the death of the author, it was translated into Hebrew by Moses Eben Tibon. Maimonides follows Aristotle's method, though he endeavours to make it applicable to his own peculiar theological views.

* Semach David.

CHAPTER VII.

ON THE SCHOLASTIC LOGICIANS FROM THE COMMENCEMENT
OF THE NINTH, TILL THE REVIVAL OF LETTERS IN ITALY
IN THE MIDDLE OF THE FOURTEENTH, CENTURY.

THE logical philosophy of the scholastic ages is closely identified with mental science itself; so much so, indeed, that it becomes a difficult task to keep always in view the radical distinction between that science, and the purely dialectic forms or systems which are ever obtruded on our notice in the abstract speculations of the middle ages. This difficulty must be our apology for such passages, in this chapter, as may appear to confound or blend together the two branches of knowledge.

The writings of the schoolmen present, at first sight, a huge and disorderly mass of thought. Extending as they do over nearly six centuries, we are only able to catch here and there the more bold and rugged parts of it. But by dint of keeping the mental eye fixed for a period on the vast materials around us, we gradually begin to see light gleaming through the rents and chinks of the apparently solid and impenetrable structure, and to recognise many of the primary and indivi-

dual elements which compose it. Though treating of all things and subjects which can come under the observation of thinking creatures, yet there is one conspicuous feature in the scholastic literature,—namely, its logical or dialectic character. Viewed as a whole, it was essentially one grand and magnificent *organon* for the discovery and dissemination of truth. This was its prominent and ostensible object in all its phases and vicissitudes. It aimed to give a reason for every thing; from Deity itself to the most insignificant material object. It was constantly in search of some splendid and infallible logical method, which should conduct the understandings of men to a full and perfect knowledge of all truth.

We are very apt to imagine that the logical philosophy of the middle ages was altogether of a purely formal character, and solely confined to sheer technicalities and syllogistic rules. But this was not the case. The grand source of all the controversies and disputations of which we read, was not the logical validity of the formal, but the logical validity and value of the mental principles of reasoning; which principles, as the philosophérs of these times conceived, lay at the root of all formal rules of argument, and were, in fact, the only things which imparted life and interest to them. Hence it is that we find every scholastic logician of any mark had some definite system of mental principles and maxims to guide him in all his philosophical inquiries; and though he might use the mere formal portions of logical instruction as a help to his labours, or as an instrument to express his meaning, yet he never rested the importance of his cause. nor the

strength of his conclusions, upon such a narrow and insecure basis. It was always to the great and general principles of reasoning to which he looked forward for the overthrow of a rival, or the establishment of his own fame as a solid and original thinker. No scholastic logician was ever great, even in his own day, or in his own university chair, from his mere skilful and adroit management of the armoury of formal logic. It was as necessary to the attainment of reputation then as it is now, that a reasoner should rise above the low jugglery of logical dilemmas and syllogistic conundrums. All the really great men of the middle ages had to lay these aside, and take their stand upon those comprehensive principles of mind which are called into requisition in all argumentative trains of thought, employed in the development or illustration of fundamental and vital truths.

To the student and ordinary reader, there are certain characteristics which belong to the scholastic logic, viewed as an entire system, which it is requisite to know, in order to fully comprehend its bearings and import. On some of these we shall make a few brief observations.

One of the prominent features of the scholastic philosophy is, that its cultivators sought for their respective logical methods among the principles of human nature, or within those sciences which more immediately spring out of, or are based upon, man's mental and moral constitution. They looked at him in a social, political, moral, thinking, and religious aspect. It was in these provinces of the inward man that they carried on their logical warfare. The abstract evidence derived

from a purely deductive science, like that of mathematics, was seldom or ever noticed ; and as to any peculiar philosophical interest being involved in mere physical phenomena, this never once entered into their minds. The outward world had but few logical charms for them. It was to humanity alone, in its strictest signification and form, that they paid attention. The reason of this is apparent ; it lies on the very surface of things. Opinions on the sciences of human nature were more important, and also more discordant in their elements ; and here we recognise at once, both cause and effect for all that argumentative turmoil, and subtile disputation, so conspicuously portrayed in the middle ages. These disputes touched the sympathetic cords of humanity in all directions. Every logical method for the discovery or promulgation of truth was considered as having a direct reference to some vital, social, political, or religious principle, intimately involved in the very constitution of society itself ; and therefore the discussion of every such logical method was to be carefully watched, and kept within proper and orthodox limits.

Though morals, politics, social and mental philosophy, were severally embraced in the scholastic disputations, yet the theological element greatly predominated over all these topics. The logic of the schools had a strong and direct religious bearing or purpose. It was illustrated and enforced by constant appeals to theological doctrines. It was an instrument to strengthen the powerful hand of the Papacy, which was every way present ; working with incredible industry, by its missionaries, its rules, its decrees, and its institutions, to gain the ascendancy over the heathen element around

it, and to place its authority upon a solid basis. The grand idea of the schoolmen was, in one word, to rear an entire and perfect temple of human knowledge, and to make the logic of theology its basis.

The idea on which the logic of the schoolmen rested, was unquestionably an idea of *theological unity*. To them the entire world of thought seemed to rest upon it. The grand object of the Bible was to teach truth. Without it the declarations it contained were worthless, and man the most forlorn and desolate of creatures. St Thomas Aquinas is decisive on this point; and he speaks the sentiments of all his order who either preceded or followed him. "Those arts," says he, "which govern other arts, are called architectonic or ruling arts; and those who exercise them are called architects, and claim the name of wise. These artificers, however, as aiming only at particular ends, reach not the universal end of all things. They are, therefore, only called wise on this or that particular subject. In this sense it is said, 'As a wise master-builder, I have laid the foundation.'*" But the name of absolutely wise is reserved for him alone whose speculations turn on the end of the universe, which is also the principle of all things. Wherefore, as the philosopher says,† the wise man must consider the highest causes. But the ultimate end of every thing is that which is intended by its first author and mover. But the first author and mover of the universe is Intellect. Therefore the ultimate end of the universe must be the good of Intellect, which is Truth. Truth must then be the ultimate end of the universe; and with the consideration

* 1 Cor. iii. 10.

† Arist. Metaph., 1, 2.

of this end must wisdom be principally occupied. Therefore the Divine Wisdom clad in flesh declares, that He came into the world to manifest the truth, saying, 'To this end was I born, and for this cause came I into the world, that I should bear witness unto the truth.' " *

It is from its theological bearings that the *unity* of the scholastic logic is chiefly derived. This unity of spirit and design is striking and complete when viewed from a certain point; but on looking a little deeper into the subject, and contemplating it apart from its mere external manifestations, we see from time to time considerable variety in the general principles it propounded and discussed. We find among the schoolmen abstract speculations of every shade and conceivable cast. We have materialism and spiritualism, empiricism and intuition, pantheism and orthodoxy, with all the varied hues of opinion to which the mingling of these leading notions with each other may be subservient, pressed upon our attention in every age of scholastic learning. And it would be difficult to point out a single speculative theory of the present day, on the nature and origin of human knowledge, which will not find its counterpart in the middle ages. But there was this great difference between these times and our own, that then books were scarce, and the means of mental communication between man and man, and kingdom and kingdom, few and tardy; and also, that whenever an opinion or speculative theory reared its head, which had the most distant chance of militating against spiritual orthodoxy, it was immediately struck down by the

* John xviii. 37.—See Chrétien on *Logical Method*, p. 41.

hand of clerical authority, and forthwith consigned to oblivion. The union of the scholastic system is therefore only a comparative unity; for there were in the shape of abstract principles of thought every variety and license in its speculative inquiries. Outwardly, that system presented an unity of purpose which nothing seemed capable of disturbing; but inwardly there was a great diversity of philosophical sentiment and unstable speculation.

These remarks apply substantially to the *logical unity* of the scholastic system. Though there were here likewise all kinds of logical methods suggested and developed, yet there was still a certain unity of purpose relative to the chief ends of all argumentative processes of thought. Logic in the eyes of all the schoolmen, no matter how opposite their abstract principles might be, was a grand and noble thing. It was to embrace the entire universe of truth. It contained within itself all the instruments for the purpose. When the scholastic logician sallied out to battle, he went armed with the ten *Categories*, with a certain stock of universal ideas or conceptions, to which were added the *Predicables*; and the whole embracing, as he conceived, the various divisions of all existing things, both physical and mental, he was thus enabled to handle all kinds of propositions, and to mould them, by the use of language, into all sorts of nominal shapes and forms. His machinery was so perfect, that nothing was too comprehensive or too minute for its grasp. It constituted his skill to bend and humour these mechanical appliances to all circumstances and contingencies. And he no more doubted of their potency than he doubted of

his own existence. Hence logic was to him the "science of sciences," "the rational science," the "art of arts." All investigations were to take their departure from logic, because it was the only mode of teaching how we should proceed in other sciences. This was the current or everyday belief of all the scholastic thinkers in every age of their disputations; and this belief forms that logical unity which is imprinted on the mind of every one conversant with their speculations.

Another striking feature of the schoolmen is, their incessant and pertinacious disputes on the nature of *particular* and *universal* ideas. This is one of the most conspicuous incidents in their history, and has served alike to hand down their fame to posterity, and to make them, in the eyes of many, objects of commiseration and contempt. For the sake of those who may not know the general merits of the question, we shall make a few explanatory observations upon it.

The point of dispute is simply this:—The Nominalists affirm that there are two classes of truth; one class relating to *individual or single objects*, and their particular qualities or properties; the other class to *general collections or assortments of things*, which we designate by a *general term or terms*. A *man* is a *particular* idea; a *multitude of men*, a *general* idea. The Nominalists affirm that the difference between those two kinds of ideas is only a verbal one; that is, that when men talk or reason about these general ideas or attributes of things, the *general term* is the *only* thing with which the mind is conversant.

Now, the Realists denied this doctrine *in toto*. They

maintained, that though these general terms are used in our descriptions of the similar properties or qualities of things, yet there is a *general idea* always present in the mind when it thus characterises the common attributes which belong to a particular genus or class. This general term is not a mere verbal instrument or symbol, but stands for a *real* permanent intellectual conception, which is always present to the mind, and to which the name of *general idea* is uniformly given.

Some reasoners attempted to steer a middle course—they were called *Conceptualists*. They agreed with the Nominalists in denouncing general ideas or conceptions, such as the Realists considered them to be; but they still thought the mind had the power of creating those general ideas, which they preferred to call *conceptions*. They said there were no essences or universal ideas to agree with general terms, and that the mind could reason about classes of individuals without the mediation of language.

It may be observed in passing, that the schoolmen must not be considered as the originators of this controversy about particular and universal ideas. We can trace it in the oldest records we have of logical philosophy. Plato, Aristotle, the Stoics, and many other philosophers and sects, entered deeply into the entire question. They were all, however, unable to solve it, and it descended down to the schoolmen of the middle ages, with all its puzzling freshness and inherent mystery.

The progress of scholasticism was characterised by extraordinary public excitement wherever it was studied. Emperors and kings, as well as the clergy and the laity,

partook of the reigning enthusiasm. The universities of France, Germany, and England, became one grand arena for the discussion of the abstract doctrines of the overheated parties; and sovereigns, led doubtless by some political reasons of the day, took part in the contests, and even scrupled not on some occasions to employ the civil power to gain a victory or punish an enemy. The accounts which creditable historians and eyewitnesses have given of these contests, exceed all ordinary belief. We are told by one author, that at the public discussions of the scholastic ages it was no uncommon thing to see disputants shout till they were quite hoarse, use the most gross and insulting language, make grimaces at each other, threaten personal chastisement, and struggle with and endeavour to prostrate each other to the ground. When words and threats failed, recourse was had to the fists. As in the wrestling schools, they buff, and spit, and kick, and bite; and even go beyond this, and use clubs and other dangerous weapons, so that many got wounded, and not a few killed outright.*

We shall not extend these general observations to a greater length, but shall now give a brief account of the individual logical opinions and writings of some of the most distinguished of the scholastic philosophers.

JOHN SCOTUS ERIGENA, A. D. 900.—Mere formal logic had but a feeble hold on the mind of this famous scholastic writer. In every case he made it subservient to mental science. His grand design was to construct a system of human knowledge by an *a priori* process. The primitive unity was the result of his logical synthesis. The

* See Ludovicus Vives.

entire material universe, and the whole range of human thought, were the logical domains for the employment of analysis; and when this analysis was fully made, and carried to its ultimate limits, the results were again absorbed into the union of synthesis—just as all created things must return to the divine unity from which they sprung.

The chief work of Scotus is his “*De Divisione Naturæ*.” The dialectics incorporated in it are deeply tinged with Platonic and Oriental notions. This has led to the general charge against Scotus, that his views were pantheistical. The “*Division of Nature*” was in subsequent ages condemned; and Pope Honorius III. issued a bull, in which it was declared that it “abounded with worms of heretical depravity.” All persons were threatened with excommunication who should retain a copy of the work in their possession. The treatise is divided into five books; and the author endeavours to work out his logical problem by means of four instruments—*division, definition, demonstration, and analysis*.

The human understanding, according to Erigena, has two powers, *reason* and *sense*. By the latter he does not mean *external*, but internal sense. The external organs of sensation only connect the understanding with the body. Relatively to their principle of action, they are but *one*. These senses are like a porter or messenger; they introduce external representations to the internal senses, which preside over the operations of the mind in its pursuit after truth. The grand object of the reasoning faculty in man, is to direct us to a Deity as an universal cause. All human

knowledge or investigation may be resolved into four categories ; namely, "that which creates, and is not created ; that which is created, and creates ; that which is created, and doth not create ; and that which neither creates, nor is created."

The logical method of Erigena sets out, like those of the philosophers of old, with the primitive unity of all knowledge ; and this unity, in his mind, was every thing which is comprehended by the word *nature*. Now, what would a logician do, aiming at the solution of all truth, under such circumstances ? The answer is, he must endeavour to shew how variety has been produced from this radical unity. But, according to Scotus, every thing rests on Deity ; all phenomena, diversities, and states of being. The intelligence of the Deity embraces all other intelligences. All existent cognitions are simply an expression of the universal unit. Every thought and feeling is but the representation of that which does not appear ; the comprehension of that which is incomprehensible ; the form and body of that which possesses neither form nor body. As human intelligence is enshrouded from the outward eye, and only makes itself known through the means of sounds and letters ; so, in like manner, does the ineffable Divine goodness descend from the heights of creation, and expand itself to the utmost limits of existence ; doing all things, subsisting in all things, without the slightest alteration or absorption of its nature or essence. As every thing springs out of this unity, so must every thing one day return to it. This is the spiritual progress of things, the ultimate destination of all science. In this return to the bosom of unity, "the

body will be resolved into vital motion, vital motion into sentiment, sentiment into reason, reason into the soul, the soul into the science of all things which are below God ; science into wisdom, which is the ultimate and immediate contemplation of truth, so far as it can be attained by the creature. At this point of returning progress, every spirit becomes an intellectual star, and thus is accomplished the final consummation ; the evening of creation, the lying down to rest of all intelligences in the luminous shadows where lie enshrouded the causes of all things, and thus day and night will be one and the same."

LANFRANC, A. D. 1036.—Lanfranc was by far the most able and distinguished dialectician of his age. He was born at Pavia, but he settled at Avranches in Normandy, where he established a seminary for the teaching of logic, among other things. This establishment gained great popularity and fame. Being deeply versed in all metaphysical lore, he cultivated a spirit of subtile disputation, and was in this line one of the master spirits of his age. We are informed that his pupils were " clerks, the sons of gentlemen, masters of transcendant renown, powerful chiefs, and individuals of high nobility."*

Historians relate a circumstance relative to Lanfranc, which shews that the " ruling passion " for discussion and disputation was strong even in death. His disciples were weeping around him, and offering up their fervent prayers in his behalf—the last rites of the Church had been administered—he was upon the very confines of the unseen world—when he opened his eyes, and in a feeble but distinct voice said, " I should have

* Tiraboschi, Brucker, Fleury.

been glad before my death to have committed to writing my ideas upon the origin of evil, for I had got some explanations which will now be lost." So saying, he gave a wave with his hand, and immediately expired.

ROSCELLINUS, A. D. 1089.—This scholastic was canon of Compeigne. He is commonly considered as the first writer who distinctly broached the Nominalist theory. He maintained that all general terms or names used in formal propositions, are but simple mental abstractions, which the mind forms by comparing a certain number of individuals with each other. In fact, he went the full length of maintaining that universals were nothing but names. This position appeared novel and startling to his age; and hence it was that he drew upon himself ecclesiastical censure and rebuke. Roscellinus was obliged to retract his opinions at the Council of Soissons, held in the year 1092. He was afterwards banished both from England and France. The theological bearings of the logical question were the real cause of his defeat and punishment. He taught "*tres personas esse tres realitates differentes*"—a proposition, says his antagonist St Anselm, that ought to warn every one how cautiously they should handle questions of holy writ. Those dialecticians of our day, who are heretics even in logic, consider universals to be nothing but mere speech. Such reasoners should be altogether excluded from discussing spiritual doctrines.*

Aventinus, a writer of the sixteenth century, makes the following observations on the system of this scholastic :—"Roscellinus," says he, "the founder of the

* St Anselm, *De Incarnatione Verbi*, ch. 2.

New Lyceum, first cultivated the science of words and phrases, and discovered a new mode of cultivating philosophy. To him we owe a particular illustration of that system of philosophical inquiry which the Peripatetics, or followers of Aristotle, divided into two classes; the one, older, abounding in invention, and claiming for itself the science of things, and therefore called the *real* school; the other, later, embracing the disturbers of this science, men calling themselves Nominalists, because, being niggardly of things, and prodigal of names and notions, they appear to be the partisans of words.”*

ST ANSELM, A. D. 1109.—St Anselm was one of the first-rate logical thinkers of his time. His opinions may be gathered from his *Dissertation on Truth*, written in the form of dialogue, and to be found at the commencement of the *third* book of his “*Monologium*.” In this essay we find him endeavouring to establish the three following propositions:—1st, That all intimations from our external senses or organs are founded in truth. Whenever there is any error in this quarter, it arises from the internal sense of perception. 2nd, There is a truth in the essence of things; and this truth depends upon the supreme truth, which is God himself. 3d, That truth has neither beginning nor end.

St Anselm was a bold speculator. He conceived he had found a logical mode of silencing all future cavillers and disputants. The following is a general summary of his views:—

While he admitted the certainty of knowledge derived from faith, he maintained, at the same time, that

* Annals. Basil, 1580.

it was incumbent on all men to cultivate the reasoning power, and to unfold the truth in the shape of science. The Scriptures are the true foundation of all mental knowledge, just as the phenomena of nature, revealed to the external senses, form the basis or groundwork of all physical inquiry. Now, the revealed and the scientific sources of truth may be brought into complete harmony.

The sphere of science must be considered as an unity, and within this unity we shall find a general principle for the elucidation of all things. This principle has two inherent attributes ; its logical universality,—that is, its susceptibility to comprehend all other ideas ; and, secondly, its character of real or objective universality,—that is, its harmony with a reality conceived as the source of all other realities. Unless we have this second attribute, we must be doomed to run round a series of logical speculations, which, though they may assume a certain dialectical form or cohesion, would have no necessary connexion with the reality of things. What is required therefore is, to establish a foundation or firm basis for the logical order and the real order of things ; and the only way of doing this is, to find out some universal idea which could not subsist as a perception of the mind, without at the same time involving the absolute reality of its object. Now, according to St Anselm, there *is* one, and only one, idea in the human understanding adequate for this purpose—the idea of infinite perfection, or the supreme good ; in fact, of Deity itself. The logician maintains, that if the idea had not a corresponding reality, it could not be the idea of absolute and supreme perfection. But

this idea, the more it is examined, will be found to unite into one both the logical and the real universality; logical universality, since all other ideas, implying more or less of being or perfection, are contained within it; and objective or real universality, since the infinite reality is the generating principle of all other realities or states of being. It is manifest that no other idea of which the human mind is cognisant possesses these two characteristics; therefore the idea of God is the general principle of science. The Deity appears under two aspects; in the logical sphere, as the head or source of all ideas; in the objective sphere of reality, as the head or source of all existences.*

It is almost needless to say, that though the views of St Anselm are lofty and noble, he has not succeeded in placing them beyond the reach of doubt and cavil. This will appear more fully afterwards.

The authors of the *Literary History of France* speak highly of the logical talents and learning of St Anselm. Logic, say they, agreeably to its general and primary meaning, was the art of reasoning soundly and justly, and by which truth might be discovered. But to exercise this art to advantage, certain general ideas, arising from the knowledge of things, were indispensable; and the logicians of this age seemed to have little relish for such necessary information. Their dialectics consisted chiefly of words, and dry and barren rules, the proper and judicious application of which was by no means commonly understood. To remedy this evil, St Anselm wrote his work, the *Grammarian*, which is, in fact, a

* The edition of St Anselm's works here referred to, is that of Cologne, 1612, folio.

treatise on the art of reasoning. In this work he undertakes to define the two general attributes of all our ideas, substance and quality. This definition aided greatly in simplifying the researches and teachings of future logicians. From him the inquirers after truth learned to elevate their minds above the barbarous sophisms of the schools; to make use of that natural reason that was within them; and to contemplate the eternal essence in all its magnificent effulgence.*

GUINALON, A. D. 1119.—This was a monk who wrote a treatise under the title of “*Liber pro insipiente adversus Anselmi in Prosologio Ratiocinationem*,” in order to refute the leading opinions of St Anselm. Guinalon endeavours to prove that his antagonist has not made out a good case; that his theory of human knowledge is gratuitous; and that, in matters of detail, it is full of logical imperfections and fallacies.

WILLIAM OF CHAMPEAUX, A. D. 1120.—This may be styled the Augustan age of scholastic logic. Our modern notions of the value of dialectics, come far short of realizing the interest and mental activity which were called into requisition under the championship of William of Champeaux. He opened, in 1109, his school of logic in the University of Paris, which had been founded about a century before. His fame speedily spread to the remotest corners of Europe. Wherever he came immense numbers of students flocked around him, to hear him expound his logical system. The Benedictines of St Maur represent Paris, in their glowing language, to be a Modern Athens; and they affirm that the number of logical and philo-

* Hist. Lit. de la France, tom. xiv.

sophical students was so great, that they actually outnumbered the ordinary citizens themselves. The influx of scholars was so prodigious, that Philip Augustus had to enlarge the boundaries of the city for their accommodation. Paris was called the city of the world.*

It is recorded, that there were certain days of the week which were more than usually thronged with students; and these were set apart by William for the exclusive discussion of universals. And the eagerness to obtain an entrance to the lecture-hall was so great on these occasions, that students often took their places the day before, and that more than once death was produced from the extreme pressure of the crowd. These lectures were the engrossing topic of general discussion; and epitomes or abstracts of them were every day handed about, both among the nobles at court, as well as the merchants and traders of the city.†

That the eloquence and method of instruction of this celebrated scholastic teacher were unrivalled, is an opinion in which all historians seem to agree. We have the testimony of Abelard on this point, who says:—"I preferred the armour of dialectic warfare to all other modes of philosophy; for it I quitted the military life, choosing rather the conflicts of disputation than the trophies of real battles. With this view, emulating the Peripatetic fame, and disputing as I went, I passed through various provinces, wherever I understood that the study was zealously pursued. At length I reached Paris, which was then the great

* Hist. Lit. de la France, tom ix. 73.

† Chron. de Paris, folio, 1596.

theatre of the art, where William of Champeaux taught, whom I chose for my preceptor.”*

William of Champeaux had been a pupil of Roscellin's, but differed entirely from his master on the nature of universals. These he considered as ideas which had a positive and independent existence, apart from all forms or combinations of words. There was something permanent and real in such terms as goodness, justice, creation, intelligence, mind, and the like. His entire Realistic theory is based upon the assumption, that universals are individualized in particular objects or beings, in such a manner that these particular objects or beings, though strictly identical in their respective essences, differ only in the variety of their accidents or transient forms.

It is said that William renounced this logical creed in a later period of his life. Abelard says:—“Again I attended his school to hear his lectures on the art of rhetoric; but where, in our several contests, I so pressed him on his favourite doctrine of *universals*, that he gave up the point, renounced his former opinion, and hence lost all the fame which he had acquired.”

ABELARD, A. D. 1142.—The name of Abelard is intimately connected with the early history of scholastic logic. He was a zealous Nominalist, and zealously contended for the validity of his theory through every phase of his eventful life. John of Salisbury says:—“That Abelard and his disciples looked upon the proposition, that we can affirm one thing from another thing, as a great absurdity, though this absurdity was backed by the authority of Aristotle.”

* Abelard's Epist., 1.

It is a difficult matter, even at the present hour, to ascertain correctly how far Abelard is really compromised in the Nominalist theory. He certainly denounces the Realists in no measured terms; but his own precise opinions on the chief point of dispute are by no means accurately known. De Gerando conceives that Abelard considered universals to have no strict or proper independence or objective reality, but to be simply *conceptions*, formed and retained in the mind solely by virtue of the signs of language. Again, John of Salisbury says:—"The one (meaning Roscellin) takes his stand on *words*; the other (Abelard) on *propositions*." These statements would go to prove, that Abelard looked upon these *conceptions* as deriving their validity and authority, not simply from the power of words, but from their logical position in every formal proposition submitted to the understanding. If this opinion be correct, Abelard must not then be classed with the supporters of absolute Nominalism, but must occupy a kind of middle station between the Nominalist theorists, and those who go under the denomination of Conceptualists.

Up to the time of Abelard, logic had been most assiduously cultivated in many countries in Europe. Schools and academies for its cultivation were established at Padua, Modena, Naples, Capua, Toulouse, Salamanca, Lyons, and Cologne. The Platonic dialectics were preferred in some localities, while Aristotle was all dominant in others. In the West, logical philosophy found munificent patrons in the Emperor Frederick II., and Alphonso X., king of Leon; the former of whom caused the logical works of Aristotle

to be translated into Latin, with the laudable view of giving them a more extended circulation, and making them more general topics of commentary and public discussion.

The mere dialectical character of logical studies began at this time, however, to wear itself out for a season. Men became tired with the everlasting play upon the pure syllogistic forms, and longed for some variety, and a wider range for their powers and faculties. The human mind became arid and mechanical, there being nothing to touch or fire the inward soul, nor satisfy its natural cravings for interesting novelties or lofty speculations. The reasoning power itself assumed a disproportionate activity and strength, and was out of keeping with the other parts of the mental structure. A reaction, therefore, against the entire dialectic system was the natural consequence. The heart and the head must be brought into a closer contact and sympathy. Science and knowledge were to be known and cultivated through the medium of contemplative and elevated feelings, and not by boisterous and logical chicanery. A new path to wisdom must be discovered, and the old one of pure abstractions abandoned. We must look to the moral and theological principles of our being for this new direction, where we shall find that contemplative intuition which can alone give confidence to our footsteps, and consolation to the spirit. We must impart comprehension and spirituality to our reasonings, and no longer mould them in those inanimate and shrivelled forms in which the dialecticians present them to us. The new school said, in fact, "What have we to do with the

disputes about genera or espèces, or particulars or universals? He for whom the eternal Word is enough, is freed from an infinite perplexity of doubts and opinions."

HUGO ST VICTOR, A. D. 1140; AND RICHARD ST VICTOR, A. D. 1173.—These two scholastics were of the contemplative school of logic. Hugo belonged to Belgium, and Richard to Scotland, and both were monks of the Abbey of St Victor, at Paris.

Hugo's logical method may be summed up in the following words:—"Our organs of sensation apprise us of the nature of external objects, and the imagination refers to things beyond the confines of matter. The latter power expands itself every where, and moves, and acts, and creates, and wills, just as it pleases. It ranges over boundless space, and embraces all the works of the Almighty, meditates and contemplates upon them, and all heavenly phenomena. Reason perceives the substances, forms, differences, properties, and qualities of objects. It detaches the qualities from the object, not however in reality, but by the power of abstraction, and places them before the eye of the mind. The understanding is the faculty which perceives invisible and spiritual substances or things. Intelligence is that which immediately recognises the existence and attributes of the Deity, and which ascends to the source of all things, and to all that is immutably true. This intelligence is exclusively directed to the abstract principles of things; that is to say, those relating to the Deity, to substance, and ideas generally. Genius seeks after that which is unknown, and reason judges of these discoveries of genius.

Memory gathers and preserves these judgments, and collects other fresh materials from new decisions. There is thus established a progressive system of ascension from things inferior to things superior; the one depending upon the other. The understanding is a kind of image of intelligence, reason a sort of image of the understanding; and so on throughout the whole extent of mental operations. The senses form the imagination, and this again gives birth to reason and sagacity. The Divine presence enlightens reason, and thus produces intelligence; and this again gives rise to that which we term wisdom. There are two distinct movements, or it may be said, there are two distinct sexes, in the human spirit. One movement bears reason to heavenly things—this is true wisdom; the other movement draws it downwards to earthly objects—and this constitutes worldly prudence and judgment.*

Richard's logical views may be stated as follows:—
 “There are three parts to instruction—experience, rational deductions, and faith. The first conducts to profane and worldly knowledge; the other two to everlasting knowledge. Wisdom conducts to virtue, and virtue to wisdom: nevertheless, men are generally carried with more ardour towards wisdom than towards virtue. The latter requires sacrifices—a triumph over our passions, which cannot, in ordinary cases, be obtained without a considerable effort.

“Philosophy is the living thought, the identical reason, the primitive intelligence of all things.

“The exercise of the bodily senses precedes the senses of the heart in a knowledge of things; for if the

* *Eruditio Didascalica*, book ii. c. 6.

mind were not made previously acquainted with them through the influence of the organs of sensation, there could be no opportunity for it to exercise thought upon these objects. What are visible things, if they are not a kind of picture of invisible objects? But intelligence is the power by the aid of which we can perceive invisible objects."

GILBERT DE LA PORÉE, A. D. 1150.—Gilbert was a determined Realist. He published a work entitled *The Six Principles*, which some have considered as an attempt to condense the *Categories* of Aristotle into that number; while other critics again affirm, that *The Six Principles* were only a species of expansion of the six latter *Predicaments*, which the Greek philosopher had passed too cursorily over. Gilbert gives us a logical definition of form. "Form," says he, "is contingent on matter, consisting of simple and invariable essence."

PETER LOMBARD, A. D. 1170.—Peter Lombard, far from indulging in any contemplative mysticism about the nature of scientific truth, was nevertheless deeply impressed with the conviction, that the general dialectics of the day were by no means serviceable to the progress of sound knowledge and religious truth. It was in order to give a check to the current of logical disputation, that he composed his *Book of Sentences*, which was an attempt to harmonize general philosophy with religion. He was a decided Realist.

JOHN OF SALISBURY, A. D. 1180.—This distinguished scholastic was a native of England. He directed his critical powers with great vigour against the prevalent abuse of the formal logic so commonly taught in his

day. He tells us that all his companions in France were so entangled in sophistic pursuits, that they had not for many years made a single step in the path of useful knowledge, nor did he think it probable they ever would. He says, "The benefits of the art, as it perfected other mental acquisitions, I am ready to admit ; but by itself it is sterile and void of life."

This author tells us that there were six distinct sects of Realists in his own time. These some modern critics have, however, reduced to four ; namely, 1st, Those who adopted the doctrines of Plato on ideas, and maintained that the names of genera and species belonged, strictly speaking, only to those objectively existing universals. 2nd, Those who thought that the individual contained within itself the entire essence of the class, and consequently, when such particular was viewed in a certain light, it was itself an universal. 3d, Those who declared that the entire aggregate of individuals was identical with the universal. And 4th, Those who looked upon the universal as a substance in some mode or other existing in the singular being or object.

The following is his exposition of the Conceptionalists—a class of logicians whose notions are but very vaguely understood even at the present hour:—"The senses," says he, "judge of material things ; but intelligence is requisite to perceive spiritual or incorporeal things, and reason to form a judgment of them. The understanding considers real objects under various points of view ; sometimes in an absolute manner, sometimes as a whole ; sometimes as connected with other things with which they are not necessarily con-

neeted ; and sometimes separated from that with which they may be combined. Though by analysis the appearance of things may be otherwise than their real qualities, this operation is not nevertheless a vain conception of the mind ; for it opens the way to the most sagacious and useful investigations. Analysis is an instrument of philosophy ; it sharpens reason, and distinguishes objects according to their true nature. If we separate the understanding from the faculty of abstraction, we shall remove from the arts the arsenal which contains their instruments. What the senses perceive—that is, subject to forms—is primary and singular substance. We give the name of *secondary substance* to that which is necessary to the existence of objects, and to their susceptibility of being known to us. That which is *one* is always one. A *universal* is that which is common to many by reason of the constitution of their nature. The notion of a universal is produced in the understanding when it conceives the conformity which nature has established amongst divers objects, as their forms, qualities, &c. Though qualities and relations cannot exist separately in the order of realities, they can be separately laid hold of by the mind, and this is the essential end or purpose of all true philosophy.”

A short time after John of Salisbury, we have a pantheistical reaction against the logical methods of both the Nominalists and Realists. This reaction manifested itself in the writings of AMAURY DE CHARTRES, A. D. 1195, and DAVID DE DINANT, A. D. 1220.

Garson gives us the ideas of Amaury de Chartres in the following words :—“ Every thing is God, and God is every thing. The Creator and the creature are

one and the same being. *Ideas are at once creative and created.* God is the end of all things, in the same sense that all things must return to him, in order to constitute with him an immutable individuality. Just as Abraham and Isaac are nothing but individualizations of human nature; so all beings are only individual forms of one sole essence." This is the ideal pantheism he taught. Our ideas are the only things in which there is any reality; every thing besides these is only a manifestation.

David de Dinant broached a pantheism of a material cast. Deity is the universal matter of existence; and all forms—that is, every thing not material—are but imaginary accidents or qualities.

VINCENT DE BEAUVAIS, A. D. 1260.—Vincent studied logic with great zeal. He supports the Realist theory with great ardour. The three great problems proposed by Porphyry, in his introduction to the *Categories* of Aristotle, relative to the certainty of general ideas, engrossed the whole of Vincent's attention. Before attempting to resolve them, he ascribes three different meanings to the word *being*—the one metaphysical, the second mathematical, and the third physical. On the first problem, after comparing the opinions of Plato and Aristotle on the point, he comes to the conclusion, that universals exist not only in the intellect, but in nature. The second problem he solves in accordance with universals relative to spiritual matters. The third and last problem he resolves in the following fashion :—"There are two causes which bring the universal within the sphere of being; the one material, which resides in the individual; the other

efficient, which resides in the understanding. Under the first relation the universal is *one* in many; in the second it is *one* simply in unity. Thus we are able to reconcile the conflicting opinions of Plato and Aristotle."*

WILLIAM OF PARIS, A. D. 1270.—William was well skilled in all the logical systems and speculations of the Arabians. He points out six meanings to the word *truth*:—1st, The fidelity of the sign should express the thing signified; 2nd, Reality opposed to apparent deception; 3d, The purity of a substance, as when we call good silver that which is exempt from all adulteration; 4th, The essence of things, such as is expressed by the definition; 5th, The existence of a Creator; 6th, Simple logical truth, which relates to the harmony between the terms and the proposition.

ST THOMAS AQUINAS, A. D. 1274.—Thomas Aquinas is the greatest name in the annals of scholastic logic and speculation. He was styled in his day the *Angelic Doctor*. He was born in the kingdom of Naples; and after publicly teaching, with great eclat, at Bologna and Paris, he died in 1274, in an Italian monastery, at the early age of forty-seven.

The logical method of Aquinas, and his speculations on the nature of truth and evidence generally, are developed chiefly in his *Summa Theologica*, and in his *Commentaries* on some parts of the philosophy of Aristotle. The former work has retained a high character among theologians and philosophers ever since its appearance; and, in fact, it is almost the only treatise

* Speculum Doctrinale, lib. iii. chap. 7.

out of the numerous folios which the scholastic ages produced, which we meet now in ordinary libraries, or which is referred to as an authority by modern writers.

Aquinas maintained that the end or object of all human science is the perfection of man. As there are several paths to science, there must needs be some guiding and regulating principle to collate and apply the evidence from each to this grand and common result. The different sciences are like individual and independent states, but governed and directed by a federal head. This federal authority or head, is *mind*. This mind or intellect is to be considered under three phases:—1st, as being conversant about the *causes* of things. 2ndly, as being entirely distinct from the external senses, because these relate to particular things or objects, whereas the mind is conversant about universals. And 3dly, the mind is the only real standard of the intelligibility of things; for, in proportion as it is freed from material influences, its sphere is enlarged, its decisions are more momentous and important, and the happiness of man is more directly and extensively promoted. All rational intelligence, therefore, depends upon and springs out of the following categories,—Being, Possibility, Existence, Cause and Effect, Action, and Passion. Mind embraces the whole of these; all other parts or divisions of human knowledge have only a partial and subordinate reference to them.

From such a huge mass of abtruse speculation as the works of Aquinas present, it is entirely beyond the reach of a work of this limited character to offer even a naked summary or outline of his arguments.

The reader must therefore be content with our touching upon a salient point here and there in his logical philosophy.

Considering the unity of science in a logical point of view, Aquinas asks the question, Do scientific principles result from a pre-existing empirical knowledge? In grappling with this question, he maintains that there are two elements in the principles of science; the *terms*, which he calls the *matter* of these principles, and the *relations* of these terms. To illustrate this, let us take the principle or proposition, *the whole is greater than a part*. The ideas, *whole* and *part*, are the terms or matter of the principle; the idea of greater extension is the relation of the terms. Again, in the principle or proposition, *the affirmative and the negative cannot be both true of the same thing*; the ideas of affirmation and negation are the terms by means of which the mind recognises the relation. Keeping in view this distinction, we immediately see a knowledge of the terms of any principle whatever depends upon our idea derived from experience; but the knowledge of the *relation* of these terms is not derived from experience, but is a part of the mind itself. To illustrate this more fully, let us take an example from the science of morals. The habit of virtue rests upon the innate notion or conception of what virtue is, or what it implies. Before the habit is formed, virtue lies in an incipient state; when it is exercised, it enters into the experimental state, and then arrives at its consummation. But the disposition and power to act virtuously, is an altogether different element or thing from the empirical habit of it. Now, it is precisely the same with science. The germs of all

sciences lie in the rational conceptions of the mind. From this doctrine, Aquinas laid it down as a logical truth beyond all doubt, that every demonstration of a formal proposition is the result of the union of these two elements; the experimental and the rational. The one is the *matter* of the demonstration, and the other its productive *form*. In this sense logic has a necessary relation to ontology.

In the great controversy on universals, Aquinas adopted the doctrine of the Realists, at least of that division of the sect or party who maintained that the one universal existed *in* the many individuals. This notion followed from his exposition concerning form and matter. Universals may be considered relative either to their *matter* or their *form*. The matter of the universal of *tree*, for example, is the union of all the attributes or qualities which belong to trees. In this sense universals are *à parte rei*; their matter exists solely in each individual thing or object. The *form* of universals is the character or attribute of universality applied to this matter; this character or attribute is derived solely by abstracting what is peculiar to each individual thing or object, in order to fix the attention on what is common to many of them. Universals are, consequently, *à parte intellectus*.

ST BONAVENTURE, A. D. 1277.—This author was called the *Seraphic Doctor*, and his views of the nature of scientific truth and logical evidence were of a spiritual, or rather mystical character. The rational faculty of man is illuminated in four different modes. The first is external, and refers to the mechanical arts of life; the second internal, shewing the natural forms and sen-

sible truths of things; the third is also internal, manifesting intellectual and philosophical truths; and the fourth teaches divine things. There is a truth in language, a truth in things, and a truth in manners.

DUNS SCOTUS, A. D. 1308.—It has been a matter of doubt whether this scholastic was a native of England, Scotland, or Ireland—each country has contended for the honour of his birth. He studied at Paris, under St Bonaventure and Aquinas. He founded a logical school, in opposition to his last-named master. He differed with St Thomas relative to the Realist question. Aquinas maintained that universals existed *really* in the individuals, whereas Duns Scotus affirmed that they existed only *formally* in individual things or objects. His broad doctrine was, that intelligence, as a principle, had nothing to do with the formation of general terms; these were indeterminate entities really subsisting *out* of the mind. He considered universal ideas to be the production of another entity. This opinion was really not his own, but had been broached by some speculators before his time; but he developed it more fully, and with great subtilty and acuteness.

Duns Scotus died suddenly at Cologne, when he had only reached his thirty-fourth year. His reputation for logical ability was unbounded; and historians have left it upon record, that thirty thousand students pressed forward to attend his lectures.

RAYMOND LULLY, A. D. 1309.—This was a zealous, but eccentric logician. His life, in connexion with logical and philosophical studies, is full of romantic interest. His *Ars Magna* is the exposition of a plan to enable the mind to work out all kinds of propositions

through the means of a mechanical table of ideas, disposed in such a manner that their different correlations would furnish satisfactory answers to every imaginable sort of questions. A great deal of ingenuity is displayed in this logical scheme ; and some degree of interest was at first excited in different schools of learning as to its practical and successful application. But its barrenness and formality soon became apparent ; and many of the scholastic doctors pronounced it as useless, and as little better than a severe satire upon the entire system of dialectic mechanism.

During the life of Lully, and for nearly two centuries after his death, his opinions on logical science were pretty generally adopted in seminaries of learning, both in Majorca and in a part of Spain. Even in the colleges of Parma, Montpelier, Paris, and Rome, he was cordially esteemed as a logician whose general views were both enlightened and highly favourable to sound religion and morality. His theory of reasoning was nearly in all cases, however, adopted with some reservations ; and he was admired more for his ingenuity than for soundness and comprehensiveness of judgment. The doctors of the Sorbonne protested against the system of Lully, although it was taught with great éclat at Toulouse by Raymond de Sébonde. Politian praises his method ; and Leibnitz himself thought his logical works a monument of genius and industry. He has been alike the object of ardent admiration and severe censure. Whilst it has been declared that the simple touch of his handkerchief frequently cured hundreds of the sick, yet the Church at one time pronounced himself and all his disciples as heretics, and Gregory IX. placed his writ-

ings, by a formal bull, in the *Index Expurgatorius*. There seems to have been as much vitality in his system, as to maintain its remembrance for a considerable time after the death of its founder.

The chief object of Lully was to reconcile the philosophy of reason with revelation. This was the prime notion at the bottom of his formal system. But the leading conception is so attenuated and expanded by numerous divisions, that it becomes almost impossible to keep his original drift in view in prosecuting any connected commentary on his speculations and forms.

His writings are voluminous to a surprising extent. It has been stated that he wrote more than seven hundred distinct treatises on philosophy and logic. The most complete edition of his works is that published by Bucholius, at Mayence, in ten volumes folio, 1721.

The following are among the best Spanish commentators on the logic of Raymond Lully. Alphonsus de Cepeda, *Arboe de la Ciencia de Raimundo Lullo*; Petrus Cirnelo, *De Arte Raimundi*; Jaimus Januarius, *Ars Artium Raimundi*; and J. A. de Herrera, *Apologia pro Raimundo*.

WILLIAM OCCAM, A. D. 1320.—Occam was a native of the county of Kent, studied at Merton College, Oxford, under the celebrated Duns Scotus, and was called the *Invincible Doctor*. The Realistic doctrines met with a bold and formidable opponent in Occam. He adopted a certain form of the Nominalists' theory. He maintained that general ideas could not have an existence independent of external things, and of the Deity. In external things there can be no general or universal ideas; for in this case they would either be

the whole, or only a part of these things. In reference to the Deity, these things do not constitute the independent essence of the Divinity, but are simply objects of knowledge. In the mind of man there is nothing more than this. "Every substance," says he, "is numerically one and singular; it is itself, and no other. It is not the same with a universal. If the universal were a thing existing in a number of individual or particular things, it would then possess a distinct and independent existence; for every thing which is superior to another thing, must, according to the established laws of God, be independent of that thing—a consequence which leads to a gross absurdity in reference to universal notions." *

Again, "Every universal is really in itself a singular, and is therefore solely a universal in consequence of its signification, which is a sign or symbol of several things. This doctrine was maintained by Avicenna, who declares that a single form in the understanding is related to a multitude of things, and is therefore a universal, inasmuch as it is an intention in the mind, whose operation is invariable to whatsoever you apply it. In consequence, this form, though in relation to the individuals it is a universal, yet in relation to the intellect on which it is impressed is itself only an individual, for it is one of the forms which are in the understanding." "No universal is any thing external to the mind." "No universal is a singular substance; for, should this be maintained, it would follow that Socrates is a universal; for there is no more reason why one singular substance should be a general idea

* *Logica Occami*, chap. xiv.

more than another." "If any substance be more things than one, it must be either several singulars or several universals. If the former, it follows that a certain substance will be,—*e. g.*, several men; and then, although the universal will be distinct from any one particular man, it will necessarily be, however, the same with all the particulars together. But, looking at the other side of the question, that one substance is really several universals, we must then ask ourselves, Is this universal a plurality of things, or only one? If we answer it is only one, it follows that it is only a singular; if we say it is several things, I again demand whether it is several universals or several singulars, and so on, *ad infinitum*."*

The commentators and critics of Occam have been by no means agreed as to the precise nature of his own opinions. He is charged with arguing in the most decided manner against the Realists—stating the case of the Nominalists, and then leaving the question without offering his own opinions upon it. What these really were seems to be, that he could not go the whole length with the Nominalists' theory, and that he was substantially what is denominated a *Conceptualist*.

Occam's logical doctrines were prohibited in the university of Paris by Pope John XXII. All persons claiming the degree of Master of Arts were bound by oath not to teach his system.

JOHN CHARLIER DE GERSON, A. D. 1363.—This able man filled for some years the important office of Chancellor of the University of Paris. He seems to have entertained a very low estimate of the scholastic logic;

* *Logicæ*, chap. xiv.

and, to escape from its chilling effect, he took shelter in the intuitive or mystical philosophy. He maintained that "logic was not of itself a science, but only the path which conducted to science." He conceived that the pivot on which the whole contention of the schools moved, arose from the notion which was invariably attached to the general term *being* as the point of contact between the thinking principle and an external universe—a notion which had been buried under a load of obscurity by imaginary abstractions and refined verbal distinctions. He defines two distinct modes of *being* :—"The one is absolute *being* or *existence*, arising from the nature of the thing itself; the other consists in its representative character as an object of the understanding. *Being*, under the latter point of view, is quite a different thing from what it is under the former. This distinction will be found to be the key for the pacification of the Realists and Nominalists, if it can be clearly and steadily seized and kept in view by the mind. Real *being* or *existence* cannot constitute a science, when considered in its objective character, in relation to positive or absolute reality; it does not change its real existence to agree with modifications arising out of this objective character. Such is the error of the Realists, who wish to establish metaphysics upon realities, without taking into account the operations of the understanding. On the other hand, the Nominalists envelope themselves too frequently with numerous verbal distinctions, which have little or no meaning."*

The scholastic system which we have attempted to

* De Concordia Metaph. et Logic., 20.

sketch, taken in its widest logical sense and application, failed in the grand object as a scientific *organon*, chiefly from aiming at ideal perfection. Its deductive apparatus wanted coherence in its first premises. Error once admitted was irreparable; and nothing could check its downward movement. Its first principles fell short of necessary truths, and its facts were by no means infallibly tested. The chain of perfect demonstration became thus broken; and no fresh materials could repair the breach. The scholastic system dealt with all subjects, but it dealt with them in so reflective and formal a fashion, that it deadened the perceptions of truth, and paralysed the active powers of mind. Every thing fell into a mechanical routine, and a drowsy apathy stole over the intellect, and deprived it of all vigorous and healthy impulses and movements. A change was imperatively called for; and when it came, though it was slow, it was sure. Another order of things was fast ripening to maturity, which gradually widened the basis of human knowledge and freedom of thought; and, though old logical difficulties still remained, they were rendered less disheartening by a vast accession of new and interesting truths. The schoolmen served their day and generation; and were soon to be supplanted by men of more enterprising genius, and more varied tastes and acquirements.

CHAPTER VIII.

LOGICAL PHILOSOPHY FROM THE MIDDLE OF THE FOURTEENTH CENTURY TILL THE PUBLICATION OF LORD BACON'S *NOVUM ORGANUM*, IN 1620.

LOGICAL science was now on the eve of undergoing a great change, both in its scientific and formal character. New and powerful influences were about to display themselves in rousing the activity of the European mind, and in directing it into those paths of investigation which would extend the boundaries of knowledge far beyond their present limits. In reference to Logic, men were in a sort of transition state; held, on the one hand, by the power of custom and authority to exercise their reasoning powers in a certain formal and prescribed manner; and, on the other, strongly urged, from the circumstances of the times, to give unbounded freedom to their faculties, and to set out afresh on new discoveries in search of more comprehensive and satisfactory methods and systems of eliciting and promulgating all truth, both secular and theological.

There were several causes external to the study of logic itself, which had a considerable share in the producing of this state of things. The dismemberment of

the Eastern empire induced a number of learned men to take refuge in Italy, who were of contemplative and speculative habits, and deeply imbued with philosophic lore. They were received with enthusiasm in the country of their adoption. They imparted a fresh ardour to abstract studies, and particularly to logic and mental philosophy, and other kindred subjects of inquiry. The entire system of Greek speculation was overhauled, and submitted to a critical and most searching examination; and, as might be naturally expected, men divided themselves into sects and parties, in accordance with their general leaning towards particular systems, connected with the great and venerated names of antiquity. Plato and Aristotle were the two grand centres of attraction and rivalry, and divided between them, in certain variable proportions, the general suffrages of the new school of philosophical inquirers.

There was another event at this time highly influential in extending the boundaries of science generally, and logic in particular; namely, the discovery of the art of printing. From the rise to the full maturity of scholastic philosophy, discussions on logical methods had been chiefly, and indeed necessarily, confined to oral lectures; but after printing became somewhat general, these discussions were embodied into formal treatises, disseminated in every direction, and were also submitted to a more critical ordeal than they ever could have been subjected to within the walls of a university or college. Hence logical inquirers became better known, as well as more widely circulated; and they travelled with more rapidity and accuracy from

one country to another, than they had formerly done from one professional chair to another.

It may be remarked here, that the general mass of logical discussion which distinguishes this period of history we have now entered upon, was marked by its decided leaning towards viewing all reasoning methods for the discovery and promulgation of truth, through the medium of certain metaphysical principles and faculties. The passionate admiration for Plato and Aristotle encouraged this mode of thinking. The Italian philosophers entered fully into all those abstract notions which lie at the root of the dialectic systems of both Plato and the Stagyrte; and they laboured hard to shew that these notions were in perfect good keeping with the purely formal systems of reasoning adopted by both these distinguished men. This is one of the leading features of the logical philosophy of this period.

The logical writings of this section of history may be classified, for all essential purposes of utility, under three heads; those of the philosophical, the theological, and the mystical logicians.

PHILOSOPHICAL LOGICIANS.

The logical writers under this head were chiefly those who viewed the art or science of reasoning through the medium of the Grecian philosophy. As it was pregnant with antagonistic principles, there was consequently a corresponding difference of opinion among its expounders and commentators; and on some occasions we witness an almost complete depar-

ture from the logical canons of Plato, Aristotle, and other Greek speculators. Indeed we see here very distinctly, for the first time during many centuries, that men were bent on testing all logical methods and systems by their own private judgment, and to be no longer led by the sheer power of authority for ancient and venerated names. This independent spirit, it is true, was shared by a few only of the more bold and courageous among the crowd of logicians of the times; but still the speculative principles of these despisers of intellectual authority, have exercised a powerful influence on the general current of logical studies, from their own day to the present hour.

George Gemistus Pletho (A. D. 1391) entered warmly into the dialectic system of Plato. In his work, *On the Difference between the Platonic and Aristotelian Philosophy*, he endeavours to shew, that Plato's views of the great principles which lay at the foundation of the ratiocinative art, were the only sound and elevating ones with which the human mind could be satisfied in its pursuit after truth. In every respect they were much superior to those embodied in the Aristotelian system, which are manifestly tinged to a great extent with empirical and material elements. It must be acknowledged, however, that Pletho carries his admiration of the Platonic system to an extravagant and unwarrantable length, incorporating in his disquisitions many of the attenuated and mystical notions common to Eastern speculation, and to the theories promulgated by the Alexandrian school.* This was the reason why his work was, after his death,

* *De Differentia*, &c., pp. 44, 60. Frankfort Edition, 1584.

committed publicly to the flames. Bessarion, Bishop of Nice (A. D. 1400), wrote also in favour of the Platonic dialectics, but in a more rational and subdued tone than Pletho. The bishop conceived that there were in reality but few points of difference between Plato and Aristotle on the main principles of their respective logical systems. What difference there was, was more apparent than real; arising not from the purely abstract nature of the two systems, but from the transcendental interpretation which was commonly given to that which Plato espoused. His theory of truth rested on the eternal character of his ideas, and on his considering the law of thought and the rule of it to be alike involved in, and necessary to all logical processes whatever. Aristotle, as Bessarion points out, viewed reasoning in the same light; only the Stagyrte did not adopt to its fullest extent Plato's system of ideas, having their archetypes in the Divine mind. It was chiefly from these considerations, that the bishop was anxious to reconcile all those differences of opinion which arose in his own day, relative to the respective natures and importance of the Platonic and Aristotelian dialectical philosophy.

Cosmo de Medici, being an enthusiastic admirer of the dialectic theory of Plato, as well as of his other speculations, patronised Marsilius Facinus (A. D. 1430), and induced him to undertake a translation of all the Platonic treatises, as well as to act upon the defensive against the assailants of the great doctrines they contained. Mr Roscoe makes the following just observations on Facinus, in reference to the influence of his labours on that spirit of free inquiry which a short time

after his day formed so conspicuous a feature in the scientific mind, both of Italy and of other countries in Europe. "The education of Facinus," says he, "was, as he himself informs us, entirely directed to the new philosophy. The doctrines and precepts of the Grecian sage were assiduously instilled into his infant mind; and, as he increased in years, he applied himself to the study, not of the works of Plato only, but also those of Plotinus—a distinguished promoter of the doctrines of that philosopher in the third century. Nor were the expectations which Cosmo had formed of Facinus disappointed. The Florentine Academy was some years afterwards established with great credit, and was the first institution of Europe for the pursuit of science, detached from the scholastic method then universally adopted. It is true the sublime and fanciful doctrines of Plato were almost as remote from the purposes of common life and general utility as the dogmatic opinions of Aristotle; but the introduction of the former was nevertheless of essential service to the cause of free inquiry and substantial knowledge. By dividing the attention of the learned, they deprived the doctrines of Aristotle of that servile respect and veneration which had so long been paid to them; and, by introducing the discussion of new subjects, they prepared the way for the pursuit of truths more properly within the sphere of the human intellect."*

The admirers of the Aristotelian logic were far from viewing this homage paid to Plato with complacency. Theodore Gaza (A. D. 1440), Georgius Scholarius (A. D. 1464), and George of Trebizond (A. D. 1484), were

* Life of Lorenzo de Medici, p. 15.

three Greek philosophers who came into Italy under the patronage of the Medici family, and who were enthusiastic admirers of the logical philosophy of the Stagyrte. They unitedly maintained the superiority of his system above every other.

Manettus (A. D. 1435), a Florentine by birth, translated Aristotle's *Categories*, with Porphyry's *Introduction*, and wrote treatises on *Wisdom*, *Truth*, *Possibility*, &c. His notion of the nature of all truth was, that it was an absolute principle of *unity*, and that it was essentially in essence the same in the Divine nature as in man.* Larentius Valla (A. D. 1445), a native of Rome, warmly combated the Aristotelian logic, and maintained that the study of it could in nowise advance the cause of useful knowledge. Erasmus praises Valla for his literary industry, learning, and eloquence. Nor ought we to omit mentioning the name of Erasmus himself (A. D. 1464) as an enemy to the logic of the schools, who in his treatise, *The Praise of Folly*, makes use of the most severe and biting sarcasms against the logical excesses and frivolities of the middle ages. "They are making preparations (he writes) for a war against the Turks. With what view soever this be undertaken, we ought to pray God that it may be profitable not to a few, but to all of us in common. Should we conquer them, it is to be supposed (for we shall hardly put them all to the sword) that attempts will be made to bring them over to Christianity. Shall we then put into their hands an Occam, a Durandus, a Scotus, a Gabriel, or an Alvarus? What will they think of us (for after all they are rational creatures),

* Opera, folio, p. 64. Frankf., 1564.

when they hear of our intricate and perplexed subtilities concerning instants, formalities, quantities, and relations? What, when they observe our quibbling professors so little of a mind, that they dispute together till they turn pale with fury, call names, spit in one another's faces, and even come to blows? What, when they behold the Jacobins fighting for their Thomas, the Minorites for their most refined and seraphic doctors, and the Nominalists and Realists each defending their own jargon, and attacking that of their adversaries?"

The names of these three men are honourably known in connexion with the improved translations of Aristotle's works. Gaza was, however, so ill rewarded for his labour, that he fell into a state of hopeless despondency, and destroyed himself. Trebizond wrote *A Comparison of Aristotle and Plato*, full of party rancour and bitterness. Scholarius was the author of an *Introduction to Porphyry on Universals*, and a *Commentary on the Categories of Aristotle*.

Ludovicus Vives (A. D. 1440), a man of great talent and penetration of judgment, raised up his voice against the general system of scholastic logic. He says:—"Some persons maintain, that studies of this description are useful to prepare the way for other kinds of learning, by sharpening and invigorating the faculties of the student; and that those who understand such subtile questions will the more readily acquire knowledge of a less difficult nature. Neither of these assertions is true. One of the chief reasons why questions of this kind are thought profound and ingenious is, that they are not fully comprehended; for it is no uncommon thing for men to applaud what they do not

understand. In the opinion of many, however, these enigmatical subtilties are only to be ranked as childish amusements; being in truth, not the produce of vigorous understandings exercised by sound erudition, but springing up in an unoccupied mind, from a sheer ignorance of better things, like noxious weeds in uncultivated grounds.”*

James Faber or Le Fevre (A. D. 1483) was another mortal enemy to the logical philosophy of the schoolmen. He conceived that all logical studies ought to proceed from a broad and enlightened system of mental philosophy; and that the mere technicalities of the schools tended to cramp and impair the human understanding. He wished to restore Aristotle’s logic to its original purity; and his *Commentaries on the Dialectics of the Stagyrte*, have this for their chief object. One of his contemporaries states, that “Faber has rendered the Peripatetic doctrine so obvious and intelligible, that we have no longer any occasion for Ammonius, Simplicius, or Philoponus.” These logical innovations, however, brought upon the head of the author the persecutions of the Sorbonne; but he was protected by Margaret, Queen of Navarre, at whose court he remained for the remainder of his life, which terminated at the advanced age of one hundred years. Nearly contemporary with Faber, was Rodolphus Agricola (A. D. 1484), who sought to effect a reformation of logic. He is praised by Leibnitz; and Peter Ramus affirms, that Agricola awakened a lively feeling in Germany towards the correction of the abuses which had for centuries disfigured the logical tuition of that

* Lib. iii., p. 120.

country ; and that he taught the youth of his day, not only how to express themselves with correctness and readiness in debate, but also to think and reason with power and justness.

Peter Ramus (A. D. 1515) stands conspicuously in the history of logic at this period. He was a very popular lecturer of the science at the college of Navarre ; and, in order to obtain the degree of Master of Arts, he published a thesis, in which he was bold enough to controvert some of the chief tenets of the philosophy of Aristotle, and also to speak in disparaging terms of the logical system of the Stagyrte. This act produced an immense ferment throughout the whole of France. Alarm was pictured in every countenance, and the university of Paris took the affair immediately under their cognisance. The members of this institution censured the conduct of Ramus severely ; they considered him a rash and headstrong person, and charged him with bringing ridicule and dishonour on their entire body. Nor did their censure spend itself in mere words. They prosecuted Ramus before the parliament of Paris, and petitioned that some marked and adequate punishment should be inflicted upon him for the heinous offence of which he had been guilty ; an offence, they affirmed, which directly aimed at the entire subversion of all sound morality and religion. The members of the university being, however, somewhat suspicious that the parliament might not enter so warmly into their views as they desired, got the indictment against Ramus removed to the king and council, where it was confidently anticipated a suitable verdict would be obtained.

Francis the First was not slow to respond to the call which the university made upon him. He entered warmly into all their grievances and prejudices. Judges were appointed to investigate the matter. They heard evidence, and gave judgment in favour of the university. The king heartily approved of the decision, and published it as a royal mandate, with his own observations upon it. The sentence was, that Ramus had been guilty of rashness, impudence, arrogance, and ignorance; that his thesis was an unfounded and malicious attack on the Aristotelian logic, which all the world admired, and which he did not himself comprehend; that the publication of this thesis should be entirely suppressed for the peace of society, and the interest of truth; and that no person whatsoever should transcribe, print, disperse, or read it, under pain of the most severe punishment.

Teissier mentions, in his *Eloge des Hommes Savans*, that the books of Ramus (his *Institutionem Dialecticæ*, and *Animadversiones Aristotelicæ*) were prohibited by the Court, and publicly denounced before the Royal College. Ramus was condemned to "abstain from pursuing his logical instructions." His sentence was published in Latin and French, and placarded throughout all the streets of Paris. He was even publicly ridiculed on the stage, amidst the uproarious plaudits of thousands of the disciples of Aristotle. He recovered, however, from these multiplied and unmerited insults. The plague raged in Paris, and cut off several of its most influential and popular of the professors of the university; and this event seems to have again opened the way to his logic chair. In 1527, the sen-

tence of Francis was reversed by Henry II., and Ramus was appointed Regius Professor of Eloquence and Philosophy. But this was only a deceptive glimpse of hope in his fortunes. Worse things soon awaited him. The cry was raised against him of secretly entertaining and propagating Protestant opinions; and, in consequence of this imputation, he was assassinated at the great massacre of St Bartholomew, and, shocking to relate, his mutilated body was thrown out of the windows of the college, and his infuriated students actually tore out his very intestines, and dragged them about the street!*

Ramus gives us his reasons for making this attack on the logic of Aristotle. He says, that after he had spent three years in the study of this system of dialectics, he put some questions to himself, "What use has it been to me? Has it rendered me more fluent in speech—given me a finer and quicker perception of poetic beauties—made me better acquainted with all those really important subjects which, when a man thoroughly understands, he is said to be a wise man?" The answer, he tells us, to these questions, was not by any means satisfactory. Wherein, then, lay the imperfection? Did it rest with him, or with the system of logic which he studied? He pondered over these matters for some time: at length the dialogues of Plato fell into his hands, and he thought he discovered a more plain and effective instrument for general reasoning than that he had been using from Aristotle. Full of this idea, he concocted that system of logic which now bears his name; and it was with this instrument

* Varillas, *Hist. de Charles IX.*

that he produced such a terrific effect amongst the learned doctors of the university of Paris.

The leading notion which seemed to have occupied the mind of Ramus relative to logic was, that all its formal rules should be pure transcripts of the laws of thought, as these are displayed in the act of reasoning. Nothing should be admitted into any system that will not bear this test. He defines logic to be the art of *discoursing correctly or justly*; and the examples which he gives are chiefly taken from the ancient orators and poets. Though professing to introduce new matter into the science of reasoning, yet all his innovations are merely of a nominal character; for the essentials of his work are altogether of an Aristotelian cast. Ramus seems to have had a very incorrect and incomplete idea of definition. He places it in the first rank in all logical operations. And there can be no doubt but this led him to pay more attention to verbal than mental definitions.

It is difficult to determine of what the great logical improvements of Ramus consists. His system, viewed as a whole, seems as complicated and as formal as any work of the kind, even in the most rampant days of the schoolmen. It has been surmised, and I think truly, that Ramus owes more of his popularity to his disclaimer of Aristotle's authority, than to any thing he himself suggested or did in reference to logical science. In this he kept no bounds. He vilified the private character of Aristotle, and attempted also to shew, that the logical works attributed to him were really not written by him, but were the result of studies long prior to his day—to Prometheus among the

Greeks, and to Noah among the Israelites. Mr Hallam observes, that “as the logic of Ramus appears to be of no more direct utility than that of Aristotle in assisting us to determine the absolute truth of propositions, and consequently could not satisfy Lord Bacon, so perhaps it does not interfere with the proper use of syllogisms, which indeed, on a less extended scale than in Aristotle, form part of the Ramean dialectics. Like all those who assailed the authority of Aristotle, he kept no bounds in depreciating his works,—aware, no doubt, that the *public*, and especially younger students, will pass more readily from admiration to contempt, than to a qualified estimation of any famous man.”*

After his death, the logic of Ramus became very popular in many of the European seats of learning. Melancthon introduced it into Germany; in some parts of Italy it was received with favour; and even in France itself, in many districts at least, it contested the honour with the Stagyrite himself. Andrew Melville introduced the logical doctrines of Ramus at Glasgow university; and they were prelected on at Cambridge in 1590. His work passed through various editions in England before the year 1600. His views were also well known at this time in Switzerland, Denmark, and Holland.

An able and popular historian and biographer of the Reformation, has expressed himself deeply impressed with the great advantages which resulted, to Scotland in particular, from the cultivation of the logical system of Ramus. It is on this account that I venture to lay

* Lit. Middle Ages, vol. i. p. 390.

the following quotations before the reader, containing, as they do, many observations worthy of notice :—

“In investigating the progress which science made in Scotland during this period, the first thing which strikes us is the introduction of the Ramean philosophy, and its general substitution in the room of the Aristotelian. The influence which Ramus had in the advancement of philosophy, has not, in my opinion, had that importance attached to it by modern writers which it deserves. In forming an estimate of the degree in which any individual has contributed to the illumination of the age in which he lived, it is necessary to take into account something more than the character of his opinions viewed in themselves : we must show that they were brought fairly and fully into contact with public opinion, and attend to the circumstances which combined to aid or to neutralize their effect. By a close examination of the writings of such men as Bruno and Cardan, we may discover here and there a sentiment akin to a truer philosophy ; but then these sentiments appear to have struck their minds during certain lucid intervals, and are buried in a farrago of fantastic, extravagant, and unintelligible notions, which must have discredited them with every sober thinker. They are to be viewed rather as curious phenomena in the history of individuals, than as indications of the progress made by the human mind. There are three grand events in the modern history of philosophy. The first is the revival of literature, which, by promoting the study of the original writings of the ancients, rescued the Aristotelian philosophy from the barbarism and corruption

which it had contracted during the middle ages. The second is the emancipation of the human mind from that slavish subjection to authority under which it had been long held by a superstitious veneration for the name of Aristotle. The third is the introduction of what is commonly called the inductive philosophy. In the progress of the human mind it behoved the two former to precede the latter. In bringing about the first, a multitude of persons in all parts of Europe had co-operated with nearly equal zeal. The merit of effecting the second is in a great measure due to one individual. The Platonic school, which was founded in the fifteenth century, did not produce any extensive or permanent effects on the mode of study and philosophizing. It originated in literary enthusiasm; its disciples were chiefly confined to Italy; and they contented themselves with pronouncing extravagant and rapturous panegyrics on the divine Plato. Valla, Agricola, Vives, and Nizolius, had pointed out various defects in the reigning philosophy, and recommended a mode of investigating truth more rational than that which was pursued in the schools. But they had not succeeded even in fixing the attention of the public on the subject. The attack which Ramus made on the Peripatetic philosophy was direct, avowed, powerful, persevering, and irresistible. He possessed an acute mind, acquaintance with ancient learning, an ardent love of truth, and invincible courage in maintaining it. He had applied with avidity to the study of the logic of Aristotle; and the result was a conviction, that it was an instrument utterly unfit for discovering truth in

any of the sciences, and answering no other purpose than that of scholastic wrangling and di-gladiation. His conviction he communicated to the public; and, in spite of all the resistance made by ignorance and prejudice, he succeeded in bringing over a great part of the learned world to his views. What Luther was in the church, Ramus was in the schools. He overthrew the infallibility of the Stagyrice, and proclaimed the right of mankind to think for themselves in matters of philosophy—a right which he maintained with the most undaunted fortitude, and which he sealed with his blood. If Ramus had not shaken the authority of the long venerated *Organon* of Aristotle, the world might not have seen the *Novum Organum* of Bacon. The faults of the Ramean system of dialectics have long been acknowledged. It proceeded upon the radical principles of the logic of Aristotle; its distinctions often turned more upon words than things; and the artificial method and uniform partitions which it prescribed in treating every subject were unnatural, and calculated to fetter, instead of forwarding, the mind in the discovery of truth. But it discarded many of the useless speculations, and much of the unmeaning jargon respecting predicables, predicaments, and topics, which made so great a figure in the ancient logic. “It inculcated upon its disciples the necessity of accuracy and order in arranging their own ideas, and in analysing those of others. And as it advanced no claim to infallibility, submitted all its rules to the test of practical usefulness, and set the only legitimate end of the whole logical apparatus constantly before the eye of the

student, its faults were soon discovered, and yielded readily to a more improved method of reasoning and investigation." *

"The bold and persevering spirit," says Dugald Stewart, "with which Ramus disputed, in the university of Paris, the authority of Aristotle, and the persecution he incurred by this philosophical heresy, entitle him to an honourable distinction from the rest of his brethren. He was certainly a man of uncommon acuteness, as well as eloquence, and placed in a very strong light some of the most vulnerable parts of the Aristotelian logic; without, however, exhibiting any marks of that deep sagacity which afterwards enabled Bacon, Descartes, and Locke, to strike at the very roots of the system. His copious and not inelegant style as a writer, recommended his innovations to those who were disgusted with the barbarism of the schools; while his avowed partiality for the reformed faith (to which he fell a martyr in the massacre of Paris), procured many proselytes to his opinions in all the Protestant countries of Europe. In England his logic had the honour, in an age of comparative light and refinement, to find an expounder and methodizer in the author of *Paradise Lost*; and in some of our northern universities, where it was very early introduced, it maintained its ground till it was supplanted by the logic of Locke." It has been said of Ramus, that "although he had genius sufficient to shake the Aristotelian fabric, he was unable to substitute any thing more solid in its place;" but it ought not to be forgotten, that even *this* praise, scanty as it may now

* M'Crie's *Life of Melville*, vol. ii. p. 302.

appear, involves a large tribute to his merits as a philosophical reformer. Before human reason could advance, it was necessary that it should first be released from its fetters.*

James Concio (A. D. 1530) was a native of Trent, and is the author of a little work, *De Methodo*, of considerable merit. He sets out with some observations showing the necessity of a given or prescribed method, when pursuing our philosophical inquiries into any subject whatever. This method is the primordial idea on which the mind rests; and to bring out all our conclusions in strict logical harmony with it, is, or ought to be, the grand object of all reasoners. A method is a classified arrangement, a general term, a starting-point, a conception, a comprehensive idea, a purpose or end, a theory or a hypothesis. It is like the central point of a circle to which all the radii converge. Hence no formal system of logic can be intelligible, unless there be a method lying underneath it which aims at accomplishing some definite thing, or effecting some definite conclusion of the understanding. A method is the living principle of all formal reasoning; without it the mere technicalities of an argumentative process are devoid of all significancy or value.

All terms, such as general idea, principle, conception, genus, species, analysis, synthesis, &c., have their foundation in the notions of method which the human mind, from its first rudimental movements, is led to entertain. These terms, or their equivalents, enter into every thing susceptible of arrangement and classification. Children display this power of methodizing

* Dissert., p. 30.

very early in life; and among all characters of men we find it in active operation, and as constituting one of the chief features in their intellectual physiognomy. But there is, so to speak, a method even in the employment of method. We find abuses from the use of it, just as we find abuses from the employments of many of our powers and faculties. Absurd systems and theories arise out of the use of method, as well as rational and sound ones. To determine its fit and beneficial application, there would seem to be a set of faculties which sit in judgment, as it were, upon it, determining the legitimacy of its use here, and denouncing its misapplication there. All kinds of scientific excellencies and defects take their rise from this common source; from the huge collector of scattered and undigested facts, to the concise and methodical systematizer of them for popular use and instruction. Method is the first step in the rational movements of men; the significant symbol of growing intelligence and usefulness. It operates as a finger-post to point out the road to some hitherto unknown or undiscovered region. There is in the mind of every philosophical inquirer an undefined notion of the direction he should take, the general appearance he should give to his materials, and the end or purpose they should serve; still, as this is but vaguely set before the intellect by the notion of method adopted from the commencement of his labours, the intrinsic value and importance of the guide can only be estimated when the journey is finished, and the labours summed up.

Method, he tells us again, is the proper manner of proceeding, whether in the examination of known

truths, the obtaining of those which are not known, or in transmitting knowledge to others. But a philosophical method requires preliminary arrangements. It is requisite we should determine beforehand in what the knowledge of things consists, how we obtain that knowledge, what matters it embraces, and what portion of these we are able to trace to their proper causes. These are considerations of great moment. We may be said to have a perfect knowledge of a thing if we know what it is; comprehend it, not only as a whole, but in all its most minute parts and dependencies. We should know the genus as well as the species; not only immediate or proximate causes and effects, but those that are more remote and hidden.

All knowledge deduced from a process of reasoning presupposes some primitive truths, immediate, founded on nature, and independent of the reasoning process. The office of method is to bring these primitive truths to light.*

Logic may be summed up as the "right method of thinking and teaching:" *recta contemplandi docendique ratio*. This "right method" demands great attention and labour; so much so, indeed, that Concio affirms, that if a subject required thirty years' study or application, he would not think it disproportioned to allot two-thirds of that period to the acquiring a dexterous use of the methodical arrangements requisite for the execution of the work. He lays great stress upon the rules which he gives for constructing definitions, by paying strict attention to the genus and differentia. The soundness of many of these rules may, however,

* De Methodo, §§ 1, 3, 13, 29, 61. Antwerp, 1602.

be fairly called in question. In the distributing of a subject the analytic method is the best, both for the investigation and communicating of truth.

James Zabarella (A. D. 1532) was a logician of some note, and published *Commentaries on Aristotle*. Marius Nizolini (A. D. 1553), wrote a work *On the Proper Principles and Mode of Reasoning*, in which he discusses some of the leading points of the Aristotelian logic, and likewise enters into an inquiry relative to the nature and offices of general terms. He was a decided Nominalist, and conceived that the Realistic theory had not a single argument of any weight on which it could rest. Leibnitz, who published an edition of his work with an able preface, censures Nizolini for his unmeasured condemnation of the Realists. In Italy his work met with little countenance or support—chiefly from his violent censures on the logic of Aristotle; and in more modern times it has been variously estimated by Bruker, Buhle, Dugald Stewart, and others. “Nizolini argues,” says Mr Hallam, “against all dialectics, and therefore differs from Ramus—concluding with two propositions as the result of his whole book :—That as many logicians and metaphysicians as are any way found, so many capital enemies of truth will then and there exist; and that, so long as Aristotle shall be supreme in the logic and metaphysics of the schools, so long will error and barbarism reign over the mind. There is nothing very deep or pointed in this summary of his reasoning.”*

Thomas Campanella (A. D. 1568) was one of the most active spirits of his age. He seems to have early

* Lit. Middle Ages, vol. ii. p. 18.

in life imbibed a strong feeling against the logical system of the schools. He enters into the question as to its value in his work, *Philosophia Realis*. He here states fully the arguments for and against it; and comes to the conclusion, that the interests of truth and the salvation of men require that a final and complete renunciation should be made of the Aristotelian logic. He maintains that all truth centres in a Deity; and there are only two great sources from which it can be obtained,—first, by examining nature carefully by way of induction, and then directing the attention to what intuition teaches, and to what the prophets reveal to us. These he considers as the chief heads under which all human knowledge should be classified.

The innovations which Campanella introduced into dialectics, could scarcely be said to be any decided improvement on the system of the schools. He seems to have laboured under the notion, that whatever he could advance contrary to the formal system of the Stagyrите, must necessarily prove a valuable addition to logical science.

He expresses himself with great contempt for the logical squabbles so frequent and inveterate in the ages which had preceded him. In his work, *De Investigatione*, he says that he ventures upon pointing out to young men a better and readier mode of obtaining knowledge than either Plato or Aristotle ever taught. He would teach them to reason, not like Raymond Lully, through the instrumentality of mere words, but from the sensible objects and operations of nature around them.

Sanchez (A. D. 1576), a Portuguese physician, was a

theoretical logician of a decidedly sceptical cast. His arguments, if such they may be called, are chiefly those which the ancient Pyrrhonians used, arising from the differences of opinion and sentiment among mankind on most subjects of acknowledged importance. There is nothing new or striking in Sanchez's scepticism. He maintains there are two modes of arriving at truth, but neither of them give us positive information of the real nature of things. These modes are experiment and reason. Neither of these alone can communicate absolute scientific truth. Mr Hallam observes, that "this treatise of Sanchez's bears witness to a deep sense of the imperfections of the received systems in science and reasoning, and to a restless longing for truth, which strikes us in other writers of this latter period of the sixteenth century. Lord Bacon, I believe, has never alluded to Sanchez, and such paradoxical scepticism was likely to disgust his strong mind; yet we may sometimes discern signs of a Baconian spirit in the attacks of our Spanish philosopher on the syllogistic logic, as being built on abstract and not significant terms, and in his clear perception of the difference between a knowledge of words and one of things."*

Logical pursuits had been cultivated the latter part of the fifteenth, and the whole of the sixteenth century, with great ardour and industry. Independent of those names we have singled out in the sections of this chapter, there were many other logicians of no small reputation, both as teachers and writers. There seemed to be a restless desire for indefinite logical innovations, both as to fundamental principles and formal systems.

* Lit. Middle Ages, vol. ii. p. 16.

New methods of investigation, and new classifications and arrangements of rules, were seen springing up in every direction. Many were eagerly engaged in pulling down old systems, while others were tenaciously defending them. Every where men's minds appeared in search of new truths, and more practical and popular modes of disseminating them when found. Kecker-man, who published his *Præcognitio* in 1606, tells us that there were upwards of sixty distinguished logical writers in his day.

In Spain and Italy there were many logical authors of note in the sixteenth century. We can do nothing more than merely mention a few of them. All the logicians of the former country took their leading principles from the system of speculation developed by Thomas Aquinas. In Italy there was not the same uniformity among its theoretical writers on the art of reasoning. Francis Toledo (A. D. 1550) wrote *Institutiones ad Logicam*; Father Zunica (A. D. 1560) was a popular teacher of dialectics; Antonius Rubeo (A. D. 1582) was the author of *Commentaria in Universam Aristotelis Logicam*; Franciscus Murcia de la Llana (A. D. 1584), *Selecta circa Universam Aristotelis Dialecticam*; Francis Gonzalez (A. D. 1600), *Logica Tripartita*; to whom may be added the names of Franciscus de Bivar, Antonio Coronelli, Antonius Johannes Andreas; Gregorius Valentinus Arcisius; Barth. J. Paschius, Dominic Soto, Joh. Bapt. Monlorius, John Clementis, and Petrus H. de Mendoza.

In Belgium and Holland we have many distinguished names connected with logic in the sixteenth century. Among the number we may mention Petrus

de Bruxella, Petrus Bertius, Joh. Murellius, J. Polyander, Th. Rebus, P. Gallardius, Justus Velsius, J. Sturmius, P. Carpenterius, John Bononia, J. Cæsar, Th. Buridanus, Father Dionysius, Franciscus Byrsæus, F. Titelmannus, Rodolphus Snellius, Augustus Huens, Bar. Latonius, Martinus Dorpius, Gerd. Listrius, and Joh. Aldeburgus.

Olaus Nicolai Nericius introduced the logical doctrines of Peter Ramus into Sweden in 1570. He illustrated them with great eloquence, and was one of the most popular lecturers on logic in the north of Europe. John Skytte was at the same time the zealous organ of the Aristotelian system. Bishop Gothus published his *Comments* in 1578, on the general scope of Ramus's innovations in logic; and a short time after this, J. Rudbeckius gave to the world his *System of Logic*, in which were incorporated many important metaphysical speculations.

THEOLOGICAL LOGICIANS.

The great movement of the Reformation effected logical science considerably—not only in its formal, but in its scientific character. All the great reformers, though differing on matters of detail as to logical instruction, maintained that the Scriptures, as a whole, had their own philosophical method relative to the manner in which truth should be investigated and disseminated among mankind. They dealt with the science of man in all his relations as a political, social, moral, and religious being. On all the branches of knowledge springing out of these several relations,

they spoke with authority and without compromise. There was no appeal from their decisions. What was not taught in the Bible concerning human nature, was neither true nor fit to be taught. This was the first time in the history of mankind that Revelation had been fairly and directly placed, face to face, with the natural understanding of man. Whatever conflicts had taken place between the philosophy of pure reason and theological truth, had only assumed the character of occasional skirmishes ; but now the great battle was to be fought, which should once and for ever determine where sovereign authority should permanently reside.

It was impossible that such ardent minds as those of the Reformers, could view with complacency any mere dry and formal study, which seemed to cramp the energies of the mind, and which dealt, or professed to deal, with the great principles of human reasoning. And this impossibility will appear still greater when we reflect that a system of this kind was one of the chief instruments which sustained the power and influence of their enemies. Accordingly we find, that the scholastic logic was one of the first things to which Luther and his reforming associates directed their attention. It presented a stupendous stumbling-block at the threshold of their theological movements. To remove it altogether seemed beyond their strength ; and to modify it appeared a work of no ordinary difficulty. But something was to be done. It must be grappled with in some shape, or Protestant doctrines and teachings would be of no avail. Luther, being the most ardent and impetuous of all the Reformers, and

the least able to brook authority of any kind, was very much inclined to strangle the "logical monster" forthwith, as the only means of making his future footsteps smooth and secure. Of course he keeps no terms with the schoolmen. He decidedly declares, that it would be impossible to establish any beneficial mode of public tuition in theology, if students were to be clogged with the scholastic dialectics. He spoke from experience, having filled an Aristotelian chair of philosophy himself. The Bible was every thing to him. He even goes so far as to paraphrase its grand and leading doctrines with the chief divisions of the philosophy of the schools in a somewhat whimsical manner. He says, "In divine things, the Father is the *Grammar*; for he imparts words, and is the source whence flow good, pure, and harmonious sayings. The Son is *Logic*, and suggests arrangement, order, and sequence of ideas. The Holy Ghost is *Rhetoric*, states, presses home, enlarges, and gives life and strength, so as to impress and hold the hearers' hearts. The schoolmen have neglected these important signs for silly trifles." "The decalogue is the *doctrine of doctrines*; the creed the *history of histories*; the Lord's prayer the *prayer of prayers*; the sacraments the *ceremonies of ceremonies*." Again he says, "What doth it contribute towards the knowledge of things, to be perpetually trifling and cavilling, in language conceived and prescribed by Aristotle, concerning matter, form, motion, and time?" "I am persuaded that neither Thomas, nor all the Thomists together, ever understood a single chapter of Aristotle." "The schoolmen! let them go to ——." "The pagan Aristotle was held in such honour, that whoever

had disputed his authority would have been condemned at Cologne as a rank heretic; but that he was so little understood, that a monk, preaching on the passion, favoured his hearers with a two hours' discussion of the question, *whether quality were really distinct from substance*—stating as an instance, “I could pass my head through that hole, *but not the size of my head.*”

The cumbersome forms and quaint language of the dialectic system annoyed Luther not a little. He says, “The most celebrated and best school is at Paris, in France. It has twenty thousand students and upwards. The theologians there have the pleasantest spot in the whole city, being a street to themselves, with gates at each end: it is called the *Sorbonne*—a name derived, I fancy, from the fruit of the service-tree (*sorbus*), which grows by the Dead Sea, and which, beautiful without, are only ashes within. Even so the university of Paris shows a goodly multitude, but is the mother of many errors. In disputing, they bawl like drunken peasants in Latin and French, so that the auditors are obliged to stamp with their feet to silence them. Before one can take one's degree as doctor of theology, one is obliged to have been a student of their sophistical and futile logic for ten years. The respondent must sit a whole day, and dispute with every comer, from six in the morning to six in the evening.” “If I were to write a treatise on logic, I would reject every foreign word, as *propositio*, *syllogismus*, *enthemena*, *exemplum*, &c., and give them German synonyms.” “Aristotle, Porphyry, the theologians of the sentences—these are the unprofitable study of this age. I desire nothing more ardently than to lay open before all eyes this false

system, which has tricked the church by covering itself with a Greek mask, and to expose its worthlessness before the world." "If the syllogistic method were applicable to divine things, the doctrine of the Holy Trinity would be 'known,' and not 'believed.'" "Aristotle is to theology as darkness to light."

Luther had studied logic under Justus Jodocus of Eisenach, or, as he is commonly called, Dr Eisenach, a monk, and the author of two works, *Summa Totius Logicæ*, 1501, and *Epitome seu Breviarium Dialecticæ*. Luther seems to have entertained a great affection for his master; but the latter felt deeply concerned at the former's reproachful and unqualified denunciations of the scholastic system—a system which appeared, in the doctor's eyes, as the sum and substance of all real knowledge and learning. And it is affirmed, that so much did he take the matter to heart, that his death was hastened, if not actually produced, by the opinions and sentiments of the great reformer on this subject.

In Luther's letters we find these differences between his logical tutor and himself often alluded to. In an epistle, addressed to Spalatin, there is a remarkable passage containing his opinion of the school logic in reference to theology; and so important are his statements, that although the passage is long, I cannot refrain from quoting it, because it embodies in fact, and in very clear terms, some of the leading philosophical difficulties which lie in the way between this logical system and revealed truth.

"You ask," says Luther, "how far I think dialectic is useful to theology; verily I do not see how it can be other than poison to a true divine. Grant that it may

be useful as a sport or exercise for youthful minds, still in sacred letters, where simple faith and divine illumination are to be awaited, the whole matter of the syllogism is to be left below, even as Abraham, when about to sacrifice, left the youth with the asses. And this, John Reuchlin, in the second book of his *Cabbala*, sufficiently confirms. For if any dialectic be necessary, that given by nature is enough, by which a man is led to compare one belief with another, and so to arrive at the truth. I have not unfrequently engaged in discussions with my friends as to the profit to be gained from this so sedulous study of philosophy and dialectic; and truly with one consent we have marvelled at, yea bewailed over, the calamity of minds finding in these studies no help, but rather a whole flood of hinderance.

“ Finally, I have written to Dr Isenach, the prince of dialecticians (as it seems) in this age, insisting most strongly on the same thing, which indeed cannot be denied; to wit, that dialectic cannot help theology, but rather hinders it, because the same grammatical terms are used in a widely different sense in theology and in logic. How, therefore, I say, can dialectic be of any use, when, after I enter on theology, the same term which in logic signified such a thing, I am compelled to reject, and to receive in another sense? And, that I may not multiply words, take for example the following:—*Body*, in the tree of Porphyry, signifies a thing made up of *matter* and *form*; but such body cannot belong to man, seeing that in the Scriptures our body signifies *matter* only, not also *form*; as where it is said, ‘ Fear not them which kill the body, but are not able to kill the soul.’ Farther, I instance the absurd state-

ment, that an angel is neither rational nor irrational; as also, that it is of no use to the Scriptures for a man to be called sensitive, rational, corporeal, animated; and briefly, the whole of that arrangement of the tree of Porphyry, I have said, and still say, is more trivial than an old woman's fancy or a sick man's dream, and justly, therefore, is it called Porphyrean (that is, bloody), from the Christian souls, to wit, which it has slain.

“The good man took it much to heart, and affirmed that my sophisms could not be credited even by myself. But these worthies are the bondmen of Aristotle and Porphyry, and consider not *what* is said, but simply who says it. Hence it comes that they are not able to understand a single chapter of Scripture, much less to render it.”*

Melancthon's antipathy to the scholastic logic was not so bitter as that of Luther's; but he by no means entertained a very high opinion of its merits. Speaking in general terms he says, “It was, however, the prevalent opinion, that logical philosophy was to be pursued merely in subservience to theological disputation, and to furnish weapons for controversy. Nothing but abstruse and subtle questions were proposed, which generated a war of words. It was characteristic of the scholastic philosophy to display all possible ingenuity in reasoning about nothing, or nothing better than the merest trifles. Dialectics were employed not to assist the understanding in the search for truth, which is their

* Luther's Briefe, Ed. De Wette, vol. i. See also Baynes, “On the New Analytic of Logical Forms,” Appendix, pp. 108-113, from which this extract is taken.

only legitimate application, but to perplex what was plain, to distinguish what did not differ, and to entangle the mind in a labyrinth of inexplicable absurdities. The topics of discussion were intention and remission, proportion and degree, infinity, formality, quiddity, individuality, and others equally intelligible and edifying! Aristotle was considered as having reached the utmost limit of human knowledge—a convenient opinion, it must be admitted, for those who were desirous of being spared the trouble of thinking or examining for themselves; and so preposterous was their attachment to this heathen oracle, that they blasphemed the great Teacher of the world by publicly reading to the people in sacred assemblies the *Ethics* of Aristotle, instead of the Gospel of Christ!”*

Melancthon's opinions underwent, however, a change as to the Peripatetic system. He conceived that it was not, in its general tenor, so inimical to the Christian faith as Luther conceived. Melancthon says, “I will add something concerning philosophy, and the reasons for believing that of Aristotle to be the most useful for the church. It is agreed, I think, by all, that logic is of prime importance, because it teaches method and order; it defines fitly, divides justly, connects aptly, judges and separates monstrous associations. Those who are ignorant of this art, tear and mangle the subjects of discourse as puppies do rags. I admire the simile of Plato, who highly extols it as resembling the fire which Prometheus brought from heaven, to kindle a light in the minds of men by which they might be able to form correct ideas. But he does

* Melanc. Apol, p. 62.

not furnish us with the precepts of the art, so that we cannot dispense with the logic of Aristotle. That of the Stoics is not extant; and, instead of being a simple method of reasoning fit for the explanation of profound subjects, it appears to have been a complete labyrinth of intricacies, and, in fact, a mere corruption of the art." *

The two chief ends which Melancthon proposed to himself in compiling his two treatises on logic, was to shorten the student's passage to a knowledge of the science, and to guide and direct him through the channel of religious sentiment and doctrine. His contemporaries give him credit for the accomplishment of both these purposes. And what was Melancthon's object in this respect, was alike the object which all the most active continental reformers had in view. They wished to avail themselves of whatever was rational and sound in the old logic; but at the same time cultivating an acquaintance with it through the medium of more comprehensive and liberal principles of philosophical inquiry than those adopted by the generality of the schoolmen.

The professors of logic in most of the Protestant colleges and universities, adopted the dialectic views of Melancthon. The most eminent among these were Simon Simonius, Philip Scherbius, Ernest Sonner, Michel Picart, Christ. Scheible, Cornelius Martini, Daniel Stahl, James Schegk, Conrad Hornejus, Christ. Dreyer, Hermann Conring, and Melchior Ziedler.

The Reformation effected in our own country a great change in logical pursuits and studies. In England,

* Orat. de Aristotile.

though the syllogistic method was still preserved, yet there crept into all the seminaries of learning grave doubts as to its value and importance as a general branch of academical education. These doubts in the course of time gradually weaned the minds of the learned from logical studies of any kind; and, speaking with considerable latitude of meaning, this has been the prevailing state of feeling, in this part of the island, from the first dawn of Protestant opinions till the present hour.

In the report of the visitation of Oxford, ordered by Henry VIII. in 1535, we find the scholastic system of logic treated with great contempt. The king himself had indeed been at one time a zealous admirer of Thomas Aquinas; but, after his rupture with the Roman see, the schoolmen had but few merits in his estimation.

In Scotland the case was somewhat different. Here the clergy took up the scholastic logic with great zeal and earnestness, and considered its general bearings on theological doctrines nearly in the same light as their Protestant brethren on the continent. Andrew Melville, as we have already seen, introduced the logic of Ramus into the university of Glasgow in the latter part of the sixteenth century. James Melville, his brother, was appointed professor of logic when Andrew left for St Andrews. John Rutherford was one of the distinguished logicians in Scotland at this period. He was a native of Jedburgh, in Roxburghshire, but had been educated in France. He became principal of St Salvador's college at St Andrews. His work on the *Art of Reasoning** is considered as one which decidedly marks

* *Comment. de Arte Disserendi.* Edin. 1577.

the progress of sound knowledge in his own country. It is founded on the system of Aristotle, but differed in some essential particulars. "Treading in the steps of his master De Grouchi, Rutherford rejected the errors into which the ancient commentators upon Aristotle had fallen, and discarded many of the frivolous questions which the modern dialecticians do so much delight in discussing."*

The university of St Andrews is the earliest, and for a long period was the most distinguished, academical institution in Scotland. Its foundation dates from 1411, and its educational functions were classified under the title of a *general study*. Prior to this period there was no university in Scotland; and those who were destined to follow the learned professions, had to seek their education in foreign countries. The university was modelled from those of Paris and Bologna. Soon after its foundation, logic was regularly taught by lectures; and all graduates had to send in a petition stating their knowledge of the text of Aristotle. The regent assembled his class three hours every day,—reading and explaining the books of the Stagyrte, which the students were bound to bring with them. The first course began with dialectics or logic; and then followed ethics, physics, metaphysics, and mathematics. To exercise the students in the art of argumentation, there were regular days appointed for public disputations.† In the early part of the sixteenth

* M'Crie's Life of Melville.

† "We hard the Oration pro rege Deitaro. Than he gaiff ws a compend of his awin of Filosopi and the partes y^r of. We enterit in the Organ of Arist. y^t year, and leirnit to the Demonstrations. The secund yeir of my course we had the Demonstrations, the Topiks, and the Sophist captiones."—*James Melville's Diary*, p. 22.

century logical studies underwent a change. There was a dissatisfaction manifested at the unprofitableness of the Aristotelian system generally; and it was enacted that "the most profitable and needful parts only of the logic of the Stagyrice should be insisted on; and that there should be likewise lectures on the Platonic philosophy, in order to counterbalance in some measure the formal and deadening effect of Peripateticism. This alteration was hailed by the liberal part of the university with great pleasure. Melville is generally considered as having been the chief instrument in effecting this reformation.*

It would appear, however, that this modification of the scholastic logic was not well received by many of the more bigoted portions of the university; and Melville came in for his full share of the obloquy thrown on the innovators.† "Disregarding the ignorant clamour and interested alarm which had been excited, he persisted in the course which he had taken; and, when the subject was introduced in the public meetings of the university, at vacations and promotions, he refuted the arguments of his opponents with such readiness, force of reasoning, and overpowering eloquence, as reduced them to silence. Before he had been two years at St Andrews, a favourable change was visible on the university. Many of those who were most strongly prejudiced against the new learning, as they called it, were induced to apply to the acquisition of languages; instead of boasting perpetually of the authority of Aris-

* Melville's *Diary*, pp. 58, 64.

† "Their breadwinner, their honor, their estimation, all was gone, if Aristotle should be so overhauled in the hairing of their shollars."—*James Melville's Diary*.

totle, and quoting him ignorantly at second-hand, they perused his writings in the original, studied the arts for purposes of real utility, and not for show and verbal contention; and, becoming real philosophers and theologians, acknowledged that they had undergone "a wonderful transportation out of darkness into light." *

MYSTICAL LOGICIANS.

The mystical logicians of this period of history scarcely differ from those of their sect in former times, save, perhaps, by their somewhat greater extravagance and love of paradox. It must always, however, be taken into consideration, that there are every degree of mysticism, from the overheated zeal for grand and noble principles, to absolute folly and conceit. Where the mystical spirit begins, and the rational terminates, is often a very nice and difficult question to solve. Mysticism is unquestionably a phase of the intuitive, but a phase embodying more or less of a lofty religious feeling.

Nicolas de Cusa (A. D. 1401) was born at Trêves, and was a philosophical logician of some note in his day. He maintained that the reasoning faculty of man only develops itself through the instrumentality of ideas of number; which ideas are its constituent elements. Human nature, considered in all its fulness, is simply that which belongs to man as man; and every movement of this nature, in its argumentative phases, is solely for the attainment of God in man.†

* M'Crie's *Life of Andrew Melville*, vol. i. p. 259.

† *Opera*, Paris, 1514.

Paracelsus (A. D. 1493) denied there was any active or spontaneous power in the reason ; it was entirely passive. All science lies, as it were, in the depths of the human intellect, in the same manner as we conceive it lies in the mind of the Deity. No formal reasonings can develop it ; but man must retire into himself, and then he will recognise the truth by a species of divine illumination, to obtain which prayer is the means, and purity of heart an indispensable condition.

Van Helmont (A. D. 1577) adopts nearly the same theory as that of Paracelsus as to the nature of evidence. The former enters, however, more fully than the latter into the nature of logical science, and minutely examines its methods, in order to shew their complete insufficiency for leading us to the fountain of truth. He maintains that the several relations which subsist between the terms of a syllogism, exist in our minds prior to the conclusion we draw from them ; and therefore all syllogistic modes of argumentation are nothing more than a bare repetition of anterior notions, the only uses of which are that of facilitating an exposition of the ideas of a speaker, and of aiding the recollection of them on the part of the hearer. All science has an independent existence apart from demonstration ; and the only way of realizing its conclusions and principles is by intuition. Sound reasoning or knowledge depends upon the entire annihilation of every intellectual operation.

Jacob Bohme (A. D. 1578) maintained, that it was impossible for any man to arrive at truth by any other means than by a direct illumination from heaven. At

the same period with Bohme, Fred. Aug. Frankonius flourished in Sweden as a mystical logician. He taught that every ordinary truth was a direct scintillation from the Divine mind, and that in the acquirement of science men were entirely the instruments in the hands of Providence, who meted out such portions of general intelligence as suited the ends and purposes of the times. George Stjernhjelm, a few years after, followed in his wake with nearly the same class of dogmas. John Buraens also, a Swedish writer, illustrated the nature of scientific truth through the medium of the doctrines of Zoroaster.

CHAPTER IX.

ON THE *NOVUM ORGANUM*, OR BACONIAN LOGIC.

ONE of the great landmarks of logic, considered in its philosophical bearings, is the *Novum Organum* of Lord Bacon. It gave a new and powerful impetus to logical investigations. We have seen, in several of the preceding chapters, how theories of reasoning fluctuated from Plato to Aristotle, and from Aristotle to Plato; but it was reserved for his lordship to withdraw the scientific world from these distinguished names, and fix its attention almost exclusively on himself, and that mode of investigation and inquiry which he has so carefully pointed out, in the celebrated work now before us.

It would be altogether unnecessary, in a treatise of this nature, to do any thing more than give a very concise outline of the nature and scope of the *Novum Organum* for general purposes. The Baconian method, or logic, as his lordship's work is often called, has been a standard topic of discussion for more than two centuries in every country in Europe, and has elicited various, and somewhat conflicting, opinions on its real

nature and importance. Indeed, these are by no means agreed on at the present hour. But to state the discussion fully, and give all the arguments for and against, would require many volumes; consequently the reader must, on the present occasion, content himself with our brief notice, however limited or imperfect it may appear. Should he require more lengthened statements, there are plenty to be had in all languages, and at a very trifling cost of either money or trouble.

The great object of the *Novum Organum* is pointed out by his lordship in the following words:—"But whence," says he, "can arise such vagueness and sterility in all the physical systems which have hitherto existed in the world? It is not certainly from any thing in nature itself; for the steadiness and regularity of the laws by which it is governed, clearly mark them out as objects of certain and precise knowledge. Neither can it arise from any want of ability in those who have pursued such inquiries, many of whom have been men of the highest talents and genius of the ages in which they lived; and it can therefore arise from nothing else but the perverseness and insufficiency of the methods that have been pursued. Men have sought to make a world from their own conceptions, and to draw from their own minds all the materials which they employed; but if, instead of doing this, they had consulted experience and observation, they would have had facts and not opinions to reason about, and might have ultimately arrived at the knowledge of the laws which govern the material world.

"As things are at present conducted," he adds, "a

sudden transition is made from sensible objects and particular facts to general propositions, which are accounted principles, and round which, as round so many fixed poles, disputation and argument continually revolve. From the propositions thus hastily assumed, all things are derived by a process compendious and precipitate—ill suited to discovery, but wonderfully accommodated to debate. The way that promises success is the reverse of this. It requires we should generalize slowly, going from particular things to those that are but one step more general; from these to others of greater extent; and so on to such as are universal. By such means we may hope to arrive at principles, not vague and obscure, but luminous and well defined, such as nature herself will not refuse to acknowledge.”

The *Novum Organum* consists of two leading parts. The first is that which the author thought was fitted to prepare the mind for the full development of the inductive process. The first aphorism of the first book embraces, in fact, his whole theory of reasoning—*“Man, the servant and interpreter of nature, does and understands only so far as he may have observed by sense, or mentally, of the order of nature—beyond this he neither knows nor can know.”*

The divers modes in which men are led from the true method of interpreting nature, Bacon classifies under the head of *idols*. In the thirty-ninth aphorism of the first book, he states that “There are four kinds of idols (or false images) which beset the mind of man. To these, for instruction, we have given names,

calling the first kind *Idols of the Tribe*; the second, *Idols of the Cave*; the third, *Idols of the Forum*; the fourth, *Idols of the Theatre*.

“ The excitation of notions and axioms by true *induction*, is certainly the fit remedy for discharge and removal of *idols*; and yet an indication of the *idols* is of much profit, for the doctrine concerning *idols* has a like regard to the *interpretation of nature*, as the doctrine concerning sophistical confutations has to the common logic.

“ *Idols of the Tribe* are planted in the human nature itself, and in the very tribe or nation of mankind. For it is untruly asserted, that human sense is the measure of things—nay, contrariwise, all the perceptions, whether of sense or mind, are from analogy of man, not from analogy of the universe; and the human intellect is like an uneven mirror to the rays of things, which mingles its own nature with the nature of things, and distorts and corrupts it.

“ *Idols of the Cave* are *idols* of the individual man. For every one, besides aberrations of the human nature in kind, has a den also, or certain individual cave, which breaks or vitiates the light of nature—either through the peculiar and individual nature of any one—or through his education and converse with others—or through his reading of books, and authorities of those he studies and admires—or through differences of impressions, as they happen in a mind pre-occupied and pre-disposed, or in one equal and sedate—and the like. So that plainly the human spirit (as it is disposed in several men) is an inconstant thing, and every way disordered, and, as it were, casual. Hence Heraclitus

has it well, that men seek for knowledge in their own little worlds, and not in the great and common world.

“There are *idols*, too, as if by agreement and mutual confederacy of the human kind—which, on account of the commerce and consort of men, we call *Idols* of the market-place or *Forum*. For mankind associate by discourse; but words are imposed from the apprehension of the vulgar. Accordingly, the evil and foolish imposition of words besets the intellect in strange ways. Neither do the definitions or explications, by which learned men have been used to fortify and clear themselves in some, at all retrieve the matter. But words plainly put a force upon the intellect, and trouble all things, and draw men away to idle and numberless controversies and fictions.

“There are *idols*, lastly, which have immigrated into the minds of men from the sundry dogmas of philosophy, and even from perverted laws of demonstrations—and these we call *Idols* of the *Theatre*; because, as many philosophies as have been received or invented, we count so many fables produced and acted, which have furnished fictitious and scenic worlds. Neither do we talk only of the present, or even ancient philosophies and sects, since many other such fables may be framed and compacted; for of errors wholly different the causes are yet nearly common. Nor, again, do we understand this only of universal or entire philosophies, but of the many principles also, and axioms of science which have grown to strength from tradition, and trust, and negligence. But of these several sorts of *idols*, we are to speak more at large, and separately, for caution of the human intellect.”

Such is the description which Bacon gives of his *Idols*. His further illustration of them occupies nearly the entire portion of the first book of the *Novum Organum*. The second part is devoted to a more extended development of his method of studying nature. Here his matter becomes more philosophical, if we may so term it, although more abstruse. His designations may be divided into three portions,—1st, *The discovery of forms*; 2nd, *Tables to illustrate this discovery*; and, 3d, *The doctrine of instances*.

What Bacon meant by *forms* is extremely difficult to say. He gives us the following, among several definitions of the word:—"When we speak of *forms*, we understand nothing more than those *laws* and *modes* of action which regulate and constitute any simple nature—such as heat, light, weight, in all kinds of matter susceptible of them; so that the *form* of heat, or the *form* of light, and the *law* of heat, and the *law* of light, are the same thing, nor do we ever lose sight of practice and things as they are."*

The tables which he gives as illustrative of the inductive method of reasoning, are taken from his *Sylva Sylvarum*, or, *A Natural History in Ten Centuries*. Many of the materials in this section of his work will not bear the examination of modern science. And the same thing may be stated in reference to his *doctrine of instances*, or facts illustrative of the discovery of forms.

* This word *form* has cut a great figure in all logical systems, from Plato downwards. Butler makes Hudibras say, that he

“profess’d
He had *first matter* seen undrest,
And found it naked and alone,
Before one rag of *form* was on.”

We must here, however, refer the reader to the *Novum Organum* itself as a justification of these observations.

The Baconian logic proceeds upon the assumption of there being certain laws of nature, and that they are uniform and stable in their operation. The great matter, then, in all physical inquiries in particular is, to bring the numerous facts which constitute them under general heads or principles; and not to pronounce any thing as being either a cause or effect of another thing—or, in other words, as being a law of nature—until repeated observations satisfactorily establish the fact beyond all cavil or dispute. His lordship's system may be viewed as a piece of general advice, admonishing philosophers to come to no hasty conclusions, but to leave their minds open to the freest current of observation and experiment. Nature must be tested and interrogated; and we must be ever on the watch to record accurately and faithfully the result. We must neither generalize too soon nor too late. Every thing must be well and properly timed, and then our physical researches will proceed upon a satisfactory and enlightened basis. This is the only legitimate way in which true science can extend her dominion.

His logic is, then, solely of a cautionary and admonitory character. It promulgates no new principle, because mankind have uniformly acted upon his suggestions from the earliest times; but they have not always viewed them in all their comprehensive fulness and import. They have been rash and froward when they should have been calm and circumspect, and been fond of theorizing when they should have been simply observing and recording facts and circumstances. They

have too often hastened to be wise, and, like commercial aspirants who hasten to be rich, have often found a snare in their path. Accurate observation and cautious generalization are the two graces which preside at his logic; and, except they act in harmony with each other, little good, in the way of promoting sound knowledge, can be effected. All theories should hang lightly and loosely about the true philosopher. He must ever be as ready to entertain a doubt as to search for and state a fact. To him systems must be mere terms of classification; and, when he sees need, he must make a cheerful surrender of every theoretical notion, no matter how long and warmly cherished, and consider himself again simply as a recorder of observations and facts.

Men in all ages and degrees of civilisation have systematized or theorized, and must ever do so, whatever may be the number and accuracy of the facts with which they have to deal; and Lord Bacon would undoubtedly have conferred upon them a most invaluable mental instrument, had he been able to lay down any general and uniform principle to show when men were fully justified in framing a theory, or adopting a general system of scientific classification of the raw materials of their knowledge. This would indeed have been an instrument or *organon* of immense value. But the Baconian logic does nothing of this kind. Notwithstanding the great extension of physical science since Bacon's time, we are apparently no nearer obtaining any such instrument than were those interrogators of nature who preceded him. Beyond a general and loud proclamation of caution and circumspection in the

construction and promulgation of general truths of science, his lordship's system does nothing. But still the admonitions he gives are admirable as far as they go; and he deserves well of mankind for bringing them before their attention in the way and manner he has done.

The *Novum Organum* is founded on a grand idea—on the absolute unity of all knowledge. This was by no means new; but the method Bacon took to realize this unity, differed from that which the scholastics adopted. His mode of proceeding was the very opposite of theirs. He built his unity on plurality—they took the unity and descended to particulars. He took his stand on a broad pyramidal basis of facts and observations, till he came to the highest point of knowledge, which is theology. He did not commence with this vital and sublime science, like many of his predecessors, but ended with it. “It is the duty,” says he, “and virtue of all knowledge, to abridge the infinity of individual experience as much as the conception of truth will permit, and to remedy the complaint of *vita brevis, ars longa*—which is performed by uniting the notions and conceptions of sciences—for knowledges are as pyramids, whereof history is the basis. So, of natural philosophy, the basis is natural history, the stage next is physic, the stage next the vertical point is metaphysic. As for the vertical point, *opus quod operatur Deus a principio usque ad finem*, we know not whether man's agency can attain unto it. But these three be the true stages of knowledge, and are to them that are depraved no better than the giants' hills,

‘Ter sunt conati imponere Pelio Ossam
Scilicet, atque Osse frondosum involvere Olympum.’

But to those which refer all things to the glory of God, they are as the three acclamations, ‘Sancte, Sancte, Sancte;’ holy in the description or dilatation of His works, holy in the connexion or concatenation of them, and holy in the union of them in a perpetual and uniform law.”

Again he says, “Horns are attributed by the ancients to Pan, or the universe, broad at the base, but tapering to a point; for the whole nature of things is pointed like a pyramid. The individuals over which the base of nature extends are infinite; these are collected into species, themselves also numerous; the species again rise into genera; and these too again contract into classes still more general, till all nature at last seems to unite in one—which is indicated by the pyramidal figure of the horns of Pan; and no wonder that his horns strike the very heavens. For the lofty things of nature, or universal forms, in some sense touch divinity; and therefore that famous chain of Homer (the chain, that is, of natural causes) was said to be fixed to the foot of Jupiter’s throne. And no one (as may be seen) has treated of metaphysic and the eternal and immutable truths of nature, withdrawing his mind for a time from the flux of things, without at the same time touching on natural theology—so ready and natural is the passage from the vertex of the pyramid to things divine.”*

This figure of the pyramid looks tolerable upon paper, but will not bear a minute examination. Men are so constituted that they cannot lay a broad foundation of inductive science before they arrive at any theo-

* De Augm., lib. ii.

logical opinions. The very contrary is the course of nature. Theological, moral, and mental principles are among the very first productions or objects of human thought, and the topics of impassioned interest. This is not a matter of choice, but necessity. A man is not left at complete liberty to adopt any method of acquiring knowledge he may think proper; the constitution of things does this, in a great measure, for him. No individual ever did rear such a pyramid of knowledge as Bacon here delineates, nor will any man ever do so till the end of time. The phenomena of human nature must, in a great degree, be the first objects of attention and generalization; the universal conceptions of being and creation must occupy the reflective understanding; and the rules of duty and obligation form the current interchange of thought between man and man, in even the most rude and primitive state of existence. The scholastics, whose logical philosophy the *Novum Organum* intended to supersede, had a better claim to consider their deductive principles as the primary staples of all science and truth, and the first to be developed and treated of, than Bacon's judicious interpretation of nature could lay claim to. The scholastic theory had the ordinary course of nature, and the historical records of our race, to support it; the *Novum Organum*, in its extreme principles, is a pure fiction of the imagination. This is the view which has been taken of it by many distinguished philosophers on the continent, and by some even in England. The idea of working upward, from a complete and accurate interpretation of nature to a knowledge of nature's God, may seem a feasible and unexceptionable maxim

in common conversation or discourse ; but when viewed as the keystone to a logical and philosophical system, it cannot fail to prove both unsatisfactory and mischievous.

Perhaps the true and sole conception which Bacon had of his own logical system was, that it should operate as a check upon those extreme views which philosophers had entertained relative to human reason. They vastly overrated its powers and capabilities in working out the unity of science. Under this impression he wished to call men back again to the study of the material universe, as a suitable counterpoise to this one-sided estimation of the value of logical methods. Philosophical logicians were too apt to be carried away by an extreme love of system ; hence he says, that the mind "needs not the addition of wings, but rather a burden as of lead, to bar all leaping and flying." The inductive science was the true remedy for all logical vices springing out of this cause. "As vulgar logic," says he, "which governs its subjects by syllogism, pertains to all sciences, and not to physical science only, so likewise our logic, which proceeds by induction, embraces all."

Lord Bacon's view of the syllogistic theory was not favourable to it. He says, "The logic which is in use avails rather for establishing and fastening errors (which are founded in vulgar notions), than for inquisition of truth ; so it is hurtful more than profitable." "Syllogism is not applied to the entrances and rudiments of the sciences ; and to mediate axioms is applied in vain, since it is by many degrees unequal to the subtilty of nature. Accordingly it binds assent, not

things." "Syllogism consists of propositions, propositions of words, words are the symbols of notions. Therefore if notions themselves (which are the ground of the matter) be confused, and hastily taken up from things, there is no solidity in what is built upon them. The only hope, then, is in a true *induction*."*

These opinions had a powerful, though not an immediate effect, upon the reputation and mode of teaching of the syllogistic logic. The great effect, however, of Lord Bacon's writings on this branch of learning, arose more from negative or indirect causes, than from his own openly declared sentiments on the nature and offices of the syllogism itself. He directed men's minds into other channels of philosophic inquiry; and this had the natural tendency to humble the lofty pretensions, and to call in question the general principles, of the old school of disputation. The influence of the *Novum Organum* in universities, was long in being sensibly felt on the prescribed modes of logical tuition. This is not to be wondered at.† Innovations are here invariably tardy. Adam Smith truly observes—"The improvements which have been made in several branches of philosophy have not, the greater part of them, been made in universities, though some no doubt have. The greater part of universities have not been very forward

* *Novum Org.*, Aph. 12, 13, 14.

† "Considering the nature of the reformation brought about by Bacon, and viewing it, as it ought to be viewed, in the light of a simple return to the principles of unsophisticated reason, it was not to be expected that any material addition to the rules of investigation, considered as an art, could be made either by his immediate successors, or by more modern philosophers. The *Novum Organum* professed to accomplish little more than to induce men to reason on philosophical subjects, as they are accustomed to reason in the ordinary affairs of life; to rescue them, in short, from the dominion of art, and restore them to the clear light and unfettered liberty of nature."—*Jardin's Outlines of Philos. Education*, p. 152.

to adopt those improvements after they were made ; and several of these learned societies have chosen, for a long period, to be the sanctuaries in which exploded systems and obsolete prejudices found shelter and protection after they had been hunted out of every corner of the world. In general, the richest and best endowed societies have been the slowest in adopting those improvements, and the most adverse to admit any considerable change in the established forms of education. Those improvements were more easily introduced into some of the poorer universities, in which the teachers, depending upon their reputation for the greatest part of their subsistence, were obliged to pay attention to the current opinions of the world.” *

The different views which have been taken of the nature and value of the Baconian method of induction have been various, though on the whole flattering. The late Professor Napier, in a paper read to the Royal Society of Edinburgh, and inserted in its published Transactions, has given a very graphic and full account of the influence which the *Novum Organum* exercised over the minds of the learned in every country in Europe soon after its publication. This influence seems to have been great beyond ordinary conception. On the other hand, the work has fallen considerably in philosophical admiration, from modern critiques on its merits which have of recent years appeared both in England and on the continent. To enable the reader to form an opinion on the subject, we shall furnish him with a quotation or two from popular writers of acknowledged talents and reputation.

* Wealth of Nations, vol. ii. p. 256.

“The great glory of literature,” says Hume, “in this island, during the reign of James, was Lord Bacon. If we consider the variety of talents displayed by this man—as a public speaker, a man of business, a wit, a courtier, a companion, an author, a philosopher—he is justly entitled to great admiration. If we consider him merely as an author and a philosopher, the light in which we view him at present, though very estimable, he was yet inferior to his contemporary Galileo—perhaps even to Kepler. Bacon pointed out, at a distance, the road to philosophy; Galileo both pointed it out to others, and made himself considerable advances in it. The Englishman was ignorant of geometry; the Florentine revived that science, excelled in it, and was the first who applied it, together with experiment, to natural philosophy. The former rejected, with the most positive disdain, the system of Copernicus; the latter fortified it with new proofs, derived both from reason and the senses. Bacon’s style is stiff and rigid; his wit, though often brilliant, is also often unnatural and far-fetched. Galileo is a lively and agreeable, though somewhat a prolix writer.”

“Though it cannot be denied,” says Professor Playfair in answer to this, “that there is considerable truth in these remarks, yet it seems to me that the comparison is not made with the justness and discrimination which might have been expected from Hume, who appears studiously to have contrasted what is most excellent in Galileo with what is most defective in Bacon. It is true that Galileo showed the way in the application of mathematics and geometry to physical investigation, and that the immediate utility of his

performance was greater than that of Bacon, as it impressed more movement on the age in which he lived, example being always so much more powerful than precept. Bacon, indeed, wrote for an age more enlightened than his own, and it was long before the full merit of his work was understood. But though Galileo was a geometer, and Bacon unacquainted with the mathematics—though Galileo added new proofs to the system of the earth's motion which Bacon rejected altogether—yet it is certain, I think, that the former has more followers as equals in the world of science than the latter, and that his excellence, though so high, is less unrivalled. The range which Bacon's speculations embraced was altogether immense. He cast a penetrating eye on the whole of science, from its feeblest and most infantine state to that strength and perfection from which it was then so remote, and which it is perhaps destined to approach continually, but never to attain. More substitutes might be found for Galileo than for Bacon. More than one could be mentioned, who, in the place of the former, would probably have done what he did; but the history of human knowledge points out nobody of whom it can be said that, placed in the situation of Bacon, he would have done what Bacon did: no man whose prophetic genius would have enabled him to delineate a system of science which had not yet begun to exist—who could have derived the knowledge of what ought to be from what was not—and who could have become so rich in wisdom, though he received from his predecessors no inheritance but their errors. I am inclined therefore to agree with D'Alembert, that when one considers the sound and enlarged

views of this great man, the multitude of objects to which his mind was turned, and the boldness of his style, which unites the most sublime images with the most rigorous precision, one is disposed to regard him as the greatest, the most universal, and the most eloquent of philosophers."

"The vulgar notion," says Mr Macaulay, "about Bacon, we take to be this, that he invented a new method of arriving at truth, which method is called Induction; and that he detected some fallacy in the syllogistic reasoning which had been in vogue before his time. This notion is about as well founded as that of the people who, in the middle ages, imagined that Virgil was a great conjurer. Many, who are far too well informed to talk such extravagant nonsense, entertain, we think, incorrect notions as to what Bacon really effected in this matter.

"The inductive method has been practised ever since the beginning of the world by every human being. It is constantly practised by the most ignorant clown, by the most thoughtless schoolboy, by the very child at the breast. That method leads the clown to the conclusion, that if he sows barley he shall not reap wheat. By that method the schoolboy learns that a cloudy day is the best for catching trout. The very infant, we imagine, is led by induction to effect milk from his mother or nurse, and none from his father.

"Not only is it not true that Bacon invented the inductive method, but it is not true that he was the first who correctly analysed that method and explained its uses. Aristotle had long before pointed out the absurdity of supposing that syllogistic reasoning could

ever conduct men to the discovery of any new principle; had shown that such discoveries must be made by induction, and by induction alone; and had given the history of the inductive process, concisely indeed, but with great perspicuity and precision.”*

“The Baconian logic,” says Mr Hallam, “deduces universal principles from select observation; that is, from particular, and, in some cases of experiment, from singular instances. It may easily appear to one conversant with the syllogistic method less legitimate than the old induction, which proceeded by an exhaustive enumeration of particulars, and at most warranting but a probable conclusion. The answer to this objection can only be found in the acknowledged uniformity of the laws of nature; so that whatever has once occurred will, under absolutely similar circumstances, always occur again. This may be called the suppressed premise of every Baconian enthymem, every inference from observation of phenomena which extend beyond the particular case. When it is once ascertained that water is composed of one proportion of oxygen to one of hydrogen, we never doubt but that such are its invariable constituents. We may repeat the experiment to secure ourselves against the risk of error in the operation, or of some unperceived condition that may have effected the result; but when a sufficient number of trials has secured us against this, an invariable law of nature is inferred from the particular instance: nobody conceives that one *pint* of pure water *can* be of a different composition from another. All men, even the most rude, reason upon this primary maxim; but

* Essays, vol. ii. p. 406.

they reason inconclusively, from misapprehending the true relations of cause and effect in the phenomena to which they direct their attention. It is by the sagacity and ingenuity with which Bacon has excluded the various sources of error, and disengaged the true cause, that his method is distinguished from that which the vulgar practise.”*

The following remarks from Stewart's *Life of Reid* present as correct and candid a view of the Baconian method as any to be found elsewhere:—"The influence of Bacon's genius on the subsequent progress of physical discovery, has been seldom duly appreciated—by some writers almost overlooked, and by others considered as the sole cause of the reformation in science which has since taken place. Of these two extremes the latter certainly is the least wide of the truth; for in the whole history of letters no other individual can be mentioned whose exertions have had so indisputable an effect in forwarding the intellectual progress of mankind. On the other hand it must be acknowledged, that before the era when Bacon appeared, various philosophers in different parts of Europe had struck into the right path; and it may perhaps be doubted whether any one important rule, with respect to the true method of investigation, be contained in his works, of which no hint can be traced in those of his predecessors. His great merit lay in concentrating their feeble and scattered lights—fixing the attention of philosophers on the distinguishing characteristics of true and of false science by a felicity of illustration peculiar to himself, seconded by the command of

* Lit. Middle Ages, vol. ii. p. 420.

powers of a bold and figurative eloquence. The method of investigation which he recommended had been previously followed in every instance in which any solid discovery had been made with respect to the laws of nature; but it had been followed accidentally and without any regular preconcerted design; and it was reserved for him to reduce to rule and method what others had effected, either fortuitously or from some momentary glimpse of the truth. These remarks are not intended to detract from the just glory of Bacon; for they apply to all those, without exception, who have systematized the principles of any of the arts. Indeed they apply less forcibly to him than to any other philosopher whose studies have been directed to objects analogous to his—inasmuch as we know of no art of which the rules have been reduced successfully into a didactic form, when the art itself was as much in infancy as experimental philosophy was when Bacon wrote.”*

* Sect. 2.

CHAPTER X.

LOGICAL SPECULATIONS OF HOBBS, GASSENDI, AND
DESCARTES.

WE have witnessed, in the two previous centuries, the extraordinary activity of the logical understanding, and how generally and earnestly men were engaged in examining into the established modes of discovering and promulgating truth, on all subjects cognisant to the human mind. The influential and important principles which lay in the background to this logical movement, were chiefly those which related to the inward nature of man—to man as a social, political, moral, and theological being. On matters of philosophical inquiry, arising out of these divisions of his constitution, there were silently, though steadily, preparing important and sweeping theories and speculations, which were at no distant period to ripen into practical systems, calculated to exercise no small influence on his condition and prospects. These general views of human nature could not be fully developed nor worked out by a dry and formal system of logical rules. All such barren collections of technicalities were repudiated by the ardent and comprehensive minds of the age,

who were bent on renouncing all kinds of authority, and of hewing out to themselves new paths to knowledge and science. Great differences of opinion on the leading principles of political science, on the foundation of moral sentiments, on the doctrines of theology, and on the rudimental nature of mind itself, obliged philosophers to refuse at once an acquiescence in any uniform logical system which immediately had to deal with their respective theories. It therefore behoved every new system to have a new logical instrument of its own—otherwise its propounder could never hope either to gain proselytes or fame.

The philosophic mind, being now in a high state of excitement, called in question the truth of every branch of knowledge, and nothing could satisfy it short of commencing afresh at the very elements of things, and of re-constructing the entire edifice of human thought and speculation. It was from this cause that we now distinctly recognise a mingling of all the chief ingredients of mental investigation with logical principles and rules, and perceive treatises on the art of reasoning issuing from the press—more or less imbued with distinct portions of political, moral, intellectual, and religious philosophy. The proportions of all, or any one of these, which might be amalgamated with logical maxims and forms, depended entirely on the views the writer entertained, and the ultimate object he wished to accomplish. If a man had a political theory to establish, he sought out a logic to correspond with it; and if a theological system was to be consolidated, a logical scheme must likewise be had to agree and harmonize with its general nature and character.

And the same thing may be remarked of every other science or department of human inquiry. All direct or formal allegiance to any particular logical system was thrown off; and every speculative mind felt itself fully at liberty to mould its logical tools to the nature of its special habits or undertakings.

We date, therefore, from this period the general embodiment of considerable portions of mental philosophy with strictly logical forms and maxims—a practice which has been, in latter times, so commonly followed in every country in Europe. The intimate relationship subsisting between the mind itself, and its laws and formal manifestations, as displayed in the reasoning process, has undoubtedly been one of the leading incentives to this mode of treating logical science. But still there were other causes which had a share in this effect; and these are fairly traceable to that indiscriminate license in which all speculators thought they had an undoubted right to indulge,—to mould their instrument of ratiocination in any way and manner best suited to the attainment of the grand object they had in view.

The philosophers whom we have now before us in the seventeenth century, were in many essential points possessed of more intellectual vigour, and a stronger stamina of enthusiasm, than the current mass of logical writers who had for two or three centuries preceded them. The men of this day had not, perhaps, more learning, but they had certainly more talent than their predecessors. The former were not *made-up* philosophers, but full of original energy, ambitious projects, and theoretical skill. They would not allow any mere

prescriptive authority on formal matters to stand in the way of their inquiries, nor sacrifice their cherished systems to any mere punctilious attentions to what might be considered logical etiquette or formalism. Their great object was to press forward, to open up new and hitherto unknown routes to knowledge and science, and to inscribe their names on the highest pinnacles of philosophic fame and distinction. Many of them had bidden farewell to all that lay behind them, in the shape of speculative knowledge and learning; fully determined to labour henceforward on their own individual account, and for their own individual honour and aggrandizement. What others had said or done before, was nothing to them. The unfettered exercise of their faculties imparted additional vigour to their movements; and, breathing the air of perfect freedom, and conscious of their own strength, they were neither overawed by the responsibilities of innovation, nor the number or magnitude of their toils.

The names we have placed at the head of this chapter are well known throughout the speculative world. They undoubtedly figure more in the character of philosophers than as mere logicians; but it would be difficult to name other three men, living contemporaneously with each other, whose opinions and writings have exercised a greater indirect effect upon the science of reasoning in modern times. They were decidedly three of the most active and logical understandings of their age. We shall take especial care, however, to shape our remarks on their several systems, so as to keep as closely within the boundaries of purely logical science as we possibly can. Their general philosophical

principles do not fall within our present historical range.

THOMAS HOBBS, B. 1588, D. 1679.—Hobbes was one of the most able men of his time, and occupies an important station in the history of speculative knowledge in the seventeenth century.

Hobbes' system of philosophy was evidently of a material cast; and, on this account, he was too clear-headed to admit into his logic any principle or formal arrangement which might seem to be at variance with his leading views on human nature. All thought, he says, is engendered by sensation. Reasoning, in every form it assumes, is resolvable to seeking either the whole by the addition of all its parts, or a part by the subtraction or withdrawal of the rest. All deductive and inductive reasonings are simply forms of equation—or, in other words, all thoughts are expressible in mathematical formulas; and every thing which cannot be put into such formulas can have no reality, at least in reference to our understandings.

All words, according to Hobbes, employed in processes of reasoning—expressing, or attempting to express, the incorporeal or spiritual, the infinite, &c.—have no meaning whatever, because they have no representative sensations in the mind. All such terms ought therefore to be banished from systems of logical philosophy and instruction.

The *Computatio sive Logica*, which contains the author's views on the art of reasoning, is part of his great work, *Elementa Philosophiæ*. He thought favourably of the syllogistic theory, both as an instrument for demonstration and useful instruction. His notion of the

abstract nature of the syllogism is in some points original.

“The thoughts,” says Hobbes, “in the mind answering to a direct syllogism, proceed in this manner,—first, There is conceived a phantasm of the thing named, with that accident or quality thereof for which it is in the minor proposition called by that name which is the subject; next, The mind has a phantasm of the same thing, with that accident or quality for which it hath the name, that in the same proposition is the predicate; thirdly, The thought returns of the same thing as having that accident in it for which it is called by the name, that is the predicate of the major proposition; and, lastly, Remembering that all these are the accidents of one and the same thing, it concludes that these three names are also names of one and the same thing; that is to say, the conclusion is true. For example, when this syllogism is made, *Man is a living creature—a living creature is a body—man is a body*—the mind conceives first an image of a man speaking or discoursing, and remembers that that which so appears is called *man*; then it has the image of the same man moving, and remembers that that which appears so is called *living creature*; thirdly, it conceives an image of the same man as filling some place or space, and remembers that what appears so is called *body*; and, lastly, when it remembers that that thing which was extended, and moved, and spake, was one and the same thing, it concludes that the three names of the thing, *man*, *living creature*, and *body*, are names of the same thing, and that therefore *man is a living creature* is a true proposition. From whence it is manifest, that living

creatures that have not the use of speech, have no conception or thought in the mind answering to a syllogism made of universal propositions; seeing it is necessary to think not only of the thing, but also by turns to remember the divers names, which for divers considerations thereof are applied to the same.”*

Hobbes was a rigid nominalist in logic, and conceived that words, and words only, were the things with which the mind is conversant in a reasoning process. At least this is the conclusion to which we are led from many passages in his writings connected with the acquisition of knowledge. We shall, however, cite a few passages from his *Leviathan*, relative to the nature and offices of words as used in general reasoning:—“One universal name is imposed on many things for their similitude in some quality or other accidents; and whereas a proper name bringeth to mind one thing only, universals recall any one of these many.” “The universality of one name to many things, hath been the cause that men think the things are themselves universal, and so seriously contend, that besides Peter and John, and all the rest of the men that are, have been, or shall be in the world, there is yet something else that we call man, namely, *man in general*, deceiving themselves by taking the universal or general appellation for the thing it signifieth.”† “Logic is,” he says, “the art of computation.” “Logicians add together two names to make an affirmation, and two affirmations to make a syllogism, and many syllogisms to make a demonstration; and from the sum or conclusion of a syllogism they subtract one proposition to find another.”‡ “Reason

* Comput., p. 50.

† Leviathan, c. 4.

‡ Ibid., c. 5.

is nothing but reckoning (that is, adding and subtracting) of the consequences of general names agreed upon, for the marking and signifying of our thoughts."

In the author's *Logica* we find the same doctrine maintained. "An universal," says he, "is not a name of many taken collectively, but of each thing taken separately. Man is not the name of the human family in general, but of each single member of it—as Peter, John, and the rest, separately. Therefore this universal name is not the name of any thing existing in nature, nor of any idea or phantasm formed in the mind, but remains so by some word or name. It thus happens that when an animal, or a stone, or a ghost, or any thing else, is called universal, we are not to understand by this term, that any man, or stone, or any thing else, was, or is, or can be, an universal; but only that these terms, animal, stone, and the like, are universal names,—that is, names common to many things; and the ideas or conceptions corresponding to them in the intellect, are the images or phantasms of single animals or other things. And consequently we do not need, in order to comprehend what is meant by an universal, any other faculty than that of imagination, by which we remember that such words have excited the ideas in our minds, sometimes of one particular thing, sometimes of another."* "If speech be peculiar to man, as for ought I know it is, then is understanding peculiar to him also; understanding being nothing else but conception caused by speech." "True and false are attributes of speech, not of things; where speech is not, there is neither truth nor falsehood, though there

* Cap. ii. § 9.

may be error. Hence as truth consists in the right ordering of names in our affirmations, a man that seeks precise truth hath need to remember what every word he uses stands for, and place it accordingly.”*

On the nature and offices of definition in processes of reasoning, he makes the following observations:—
 “Every man who aspires to true knowledge should examine the definitions of former authors, and either correct them or make them anew. For the errors of definitions multiply themselves according as the reckoning proceeds, and leads men into absurdities, which at last they see, but cannot avoid, without reckoning anew from the beginning, in which lies the foundation of their errors. . . . In the right definition of names lies the first use of speech, which is the acquisition of science. And in wrong or no definitions lies the first abuse, from which proceed all false and senseless tenets, which make these men that take their instruction from the authority of books, and not from their own meditations, to be as much below the condition of ignorant men, as men endued with true science are above it. For between true science and erroneous doctrine, ignorance is the middle. Words are wise men’s counters; they do but reckon by them; but they are the money of fools.”†

On the nature of human knowledge generally, Hobbes remarks, “There are two kinds of knowledge; the one, sense or knowledge, original, and remembrance of the same; the other, science, or knowledge of the truth of propositions, derived from the understanding. Both are but experience, one of things without, the

* *Leviathan*.

† *Ibid*.

other from the proper use of words in language; and experience being but remembrance, all knowledge is remembrance. Knowledge implies two things, truth and evidence; the latter is the concomitance of a man's conception, with the words that signify such conception in the act of ratiocination." "Evidence is to truth as the sap to the tree, which, so far it creepeth along with the body and branches, keepeth them alive; when it forsaketh them they die; for this, evidence, which is meaning with words, is the life of truth." "Science is evidence of truth, from some beginning or principle of sense. The first principle of knowledge is, that we have such and such conceptions; the second, that we have thus and thus named the things whereof they are conceptions; the third is, that we have joined these names in such a manner as to make true propositions; the fourth and last is, that we have joined these propositions in such a manner as they could be concluding, and the truth of the conclusion said to be known."*

Hobbes defines *method* to be "the knowledge we acquire by true ratiocination of appearances, or apparent effects, from the knowledge we have of some possible production or generation of the same; and of such production, as has been or may be, from the knowledge we have of the effects. Method is, therefore, the shortest way of finding out effects by their known causes, or of causes by their known effects."†

GASSENDI, B. 1592, D. 1655.—The most important event in the life of Gassendi was the publication of his *Exercitationes Paradoxicæ*, published in 1624. This

* Hum. Nat., c. 6.

† Comput., p. 66.

was a bold and fierce attack upon the logical system of Aristotle. Though the work raised up many enemies against him, yet it extended his fame, and obtained him Church preferment. The censures in the treatise were, however, so severe and general, that Gassendi found it expedient to qualify his opinions on the subject of logic, and to allow the scholastic system some portion of honour and merit.

These modified logical opinions, cherished in after life, are to be found in Gassendi's *Syntagma Philosophicum*. The work is divided into three parts, logic, physics, and ethics. In the first two books on the logic, we have a history of the science from Zeno to Descartes, and on the criterion of truth.

In this historical sketch we have an account of the logic of Zeno, of Elea; Euclid, of Megara; of Plato, of Aristotle, of Epicurus, of Raymond Lully, of Ramus, of Bacon, and of Descartes. These several dissertations amount collectively to thirty-six pages folio.

The author's *Institutiones Logicæ* are divided into four parts,—1st, The conception or idea of things; 2nd, Propositions; 3d, The Syllogism; and 4th, Method.*

We must seek for Gassendi's logical opinions in his system of mental philosophy. He may be said to have followed a sort of middle path between Hobbes and Descartes. Gassendi conceived that sensation was the source of all human knowledge; and hence his often repetition of the ancient maxim, "that there was nothing in the mind which had not been previously in the senses." But the position was qualified in this manner. Sensation furnishes us with the perception of

* Opera Omnia, vol. i. Lugd. 1658.

facts, but the mind makes a comparison of facts; and from this mental act or movement there spring up particular notions, and general ideas and principles.*

Gassendi's writings were more influential on logical science, from the spirit of discussion which they awakened in Europe than from any positive innovations he made in the mode of teaching science itself. His speculations became known in every seat of learning; his great and acknowledged erudition, his love of truth, his intellectual courage, and the opposition he encountered, were favourable to the extension of his opinions; and his indefatigable industry enabled him to turn these varied advantages to the most profitable use.

DESCARTES, B. 1596, D. 1650.—This distinguished man was a native of Haigh, in Touraine, and received his education at the Jesuits' College of Flèche. Here he studied philosophy; but soon joined the French army in Holland. His innate love of study was, however, too powerful for the pleasures and perils of the camp, and he retired, while quite a young man, into private life, there to devote himself henceforward to the more congenial and noble occupations and pursuits of the philosopher.

Descartes is to be considered both in the light of a theoretical and practical logician. In the former capacity he lays down the principles on which all evidence and science rest; and in the latter he treats of those common, but important rules, which guide the reasoning faculty to great and interesting results, and preserve it from pursuing erroneous and futile methods of investigation.

* Logic, p. 93.

From the incessant and discordant disputes on the nature of truth, and the fundamental axioms of science, which had preceded Descartes in the schools of logic and philosophy, he was led to entertain desponding thoughts relative to the standard of scientific truth generally, and to meditate on the apparent impossibility of the human understanding ever being able to extricate itself from the jungle of difficulties into which the ingenuity of men, from age to age, had led it. Thinking long and earnestly on this topic, he was induced to conceive that there must certainly be some method or other which, if pursued, would enable candid and inquiring minds to throw off this incubus of doubt; and, following up the first suggestion, he thought he saw in the distance, like a nebulous cloud in the horizon, a certain principle which pointed him to something like certitude and truth. Setting aside all the standards of evidence of which he had ever heard or read, he began the inquiry himself, and *in himself*; and this inquiry led him to repose an unconditional and absolute confidence in the principle of his own *internal consciousness*. *Cogito, ergo sum*, was his first and solid stepping-stone to rational conviction. What he himself felt must be true, if there be any thing true in nature whatever. This appeared to be a maxim of immense value to the prosecution of scientific certainty, and he hoped to be able to shew, by a full and comprehensive development of it, that the reasoning faculty of man had something satisfactory and solid to rest upon. "Whatever doubts," says he, "I may have, I cannot doubt of my own existence."

Having made this maxim of consciousness a starting-

point, he proceeded to demonstrate certain other important truths, some of which, however, lie within the provinces of philosophy and theology rather than logic. Among the most vital of these was the existence of a Deity, which Descartes considered was vitally connected with the logical elements of all truth and science. The problem he attempted to solve assumed this form. To find an idea which could not subsist as an intellectual conception, without its object itself having also a positive existence—an idea which should be invested with subjective possibility, as far as it had objective reality. He makes the idea of a supremely perfect Being as the principle which connects or binds the ideal with the real. This idea of supreme perfection implies or involves existence, inasmuch as existence is itself a decided perfection. “If we ask,” says he, “not in respect of a body, but in respect to any thing, whatever that thing may be, which has within itself all the perfections which can be embodied within it, whether existence is to be reckoned among them, we may at first perhaps be in some doubt about it, because our mind, which is finite, not being in the habit of considering them separately, may not perceive at the first glance how necessarily they are joined together. But if we examine with care whether existence belongs to a Being supremely powerful, and what sort of existence that really is, we shall find ourselves in a position, first, to affirm, that at the least possible existence agrees with Him, as well as with all other things of which we have of ourselves any clear idea, even those which are composed of fictions of our own understanding; and, secondly, because we cannot think that His existence is

possible, without knowing at the same time that He can exist by His own innate power or force ;—hence we conclude that He really exists, and that He has been from all eternity. It is very evident from the light of nature, that that which exists by virtue of its own force or power, exists always ; and thus we come to know that necessary existence is contained in the idea of a supremely powerful Being, not by a fiction of the understanding, but because it belongs to the true and immutable nature of such a Being to exist ; and we readily know that it is impossible for this supremely powerful Being not to have in himself all other perfections that are contained in the idea of God, in such order and character, that by their own proper nature, and without any fiction of the understanding, they are always joined together and exist in the Divine essence. Just, in like manner, as I affirm my own existence, because the idea of it is contained in the notion or conception of thinking ; so, likewise, I affirm the existence of the supremely perfect Being, because the idea of existence is contained in the very idea of such a Being. The existence of an external reality rests, therefore, upon the same logical basis as the internal reality.”

The logical rules deducible from Descartes' *method*, may be stated under the four following heads,—1st, Nothing is to be admitted as true or certain but what is clearly and obviously so—that is, there is to be nothing more admitted in the conclusion than what presents itself distinctly to the understanding ; 2nd, Every question should be analysed into as many separate parts as possible, in order that every part may be easily recognised and conceived, and its relation to the

whole more readily ascertained ; 3d, Every examination should be conducted with order, commencing with objects the most simple and easiest known, and ascending step by step to truths of a more complex and difficult character. 4th, We must calculate with great care and circumspection, that nothing is omitted in the consideration of the question before us.

And here it may be remarked, that the chief incentive to Descartes' inquiry as to the foundation of logical philosophy, proceeded from a theological source. We have here before us another striking illustration of the all-powerful influence of revelation on logical studies and inquiries, which we have already noticed at some length in the fourth chapter. The train of thought which led Descartes to institute investigations into the nature of truth, was precisely the same as that which displayed itself in the mind of Plato, Aristotle, and others—only qualified and rendered more precise and definite in its aim by the knowledge which the French philosopher had of the sacred canons. It appeared obvious to the ancients, that the doctrines of an intelligent First Cause, and the immortality of the soul, had a direct and necessary bearing upon all abstract maxims or principles of reasoning ; and the same thing, in the case before us, occurs to Descartes. He seems to have said to himself—of what importance are any discussions about truth, if there be no intelligent Being in the universe ? If, moreover, men die like the grass or the beasts of the field, of what consequence to him whether a thing be what you term true or false ? What can moral truth, or political truth, or judicial truth, or any other kind of truth, be to a being that is born but to

die, and for ever perish? It is only a contradiction in terms to talk of truth, while it is denied in the same breath that there is any intelligent principle in nature. Truth and intelligence are but two words for the same idea. And how did that idea ever enter into the mind of man? From whence did it proceed? Why should truth be the eager object of all our inquiries and pursuits, if there be no great intelligent cause in nature on which it can rest? Why connect truth with man? Why not talk of animal truth, of vegetable truth, of fossil truth, or of granite truth, if man has neither an intelligent Creator nor a spirit within him?

Such, I have no doubt, constituted the substance of the inquiries which Descartes often put to himself, in meditating on his philosophical and logical *method*. We have the strongest proof that such trains of thought really did pass through his mind, not only from the general scope of his writings, but from the language used in one of his meditations. He says, "I have always conceived that the two grand questions—the existence of God, and the immortality of the soul, were the chief of those which ought to be demonstrated rather by philosophy than by theology. For although it is sufficient for us, who are of the faithful, to believe in God, and that the soul does not perish with the body, it certainly does not appear to be possible to persuade the infidels to any religion, nor hardly to any moral virtue, unless we first prove to them these two doctrines by natural reason."

This famous logical method of Descartes took its rise, therefore, from a purely theological source. The connexion between the elementary principles of religion

and the standard of truth, had, it is true, been often noticed before, and had indeed constituted the theories of many logical speculators; but he saw that connexion in a new light, and illustrated its character and influence after his own fashion.

There are many objections made to the chief principle of Descartes' method, by different philosophers of note, all of which he endeavoured to obviate or explain away. In his posthumous work, *On the Search after Truth*, in one of his replies to the objection, that to prove one's own existence by the act of thinking, we should previously know what existence and thought are, we find one of the most acute and profound passages on the nature of verbal definition generally, to be found in any writer. The aim of the passage is to shew that there are certain elementary principles of thought which circumscribe the range of definitions of all kinds; and without these elementary principles, or intuitive ideas, such a thing as reasoning would be impossible. Descartes gives here an important lesson on the general use of definition—a lesson which ought not to be thrown away on those modern writers on logic, who seem to lay such stress upon what they call the correct defining of terms, as to lead their readers to imagine that the whole art or science of reasoning depended upon its exercise.

“I agree with you,” says Descartes, “that it is necessary to know what doubt is, and what thought is, before we can be fully persuaded of this reasoning. I doubt, therefore I am; or, what is the same, I think, therefore I am. But do not imagine that for this

purpose you must torture your mind to find out the next genus, or the essential differences, as the logicians talk, and so compose a regular definition. Leave this to such as teach or dispute in the schools. But whoever will examine things by himself, and judge of them according to his understanding, cannot be so senseless as not to see clearly, when he pays attention, what doubting, thinking, being are, or to have any need to learn their distinctions. Besides, there are things which we render more obscure in attempting to define them; because, as they are very simple and very clear, we cannot know and comprehend them better than by themselves. And it should be reckoned among the chief errors that can be committed in science, for men to fancy that they can define that which they can only conceive, and distinguish what is clear in it from what is obscure; while they do not see the difference between that which must be defined before it is understood, and that which can be fully known by itself. Now, among things which can be thus clearly known by themselves, we must put doubting, thinking, being. For I do not believe any one ever existed so stupid as to need to know what being is before he could affirm that he is; and it is the same of thought and doubt. Nor can he learn these things except by himself, nor be convinced of them but by his own experience, and by that consciousness and inward witness which every man finds in himself when he examines the subject. And as we should define whiteness in vain to a man who can see nothing, while one who can open his eyes and see a white object requires no more; so to know what

doubting is, and what thinking is, it is only necessary to doubt and to think.”*

“Nothing,” says Mr Hallam, whose translation is here adopted, “could more tend to cut short the verbal cavils of the schoolmen, than this limitation of their favourite exercise, definition. It is due therefore to Descartes, so often accused of appropriating the discoveries of others, that we should establish his right to one of the most important that the new logic has to boast.”†

Out of this scientific method of inquiry sprung the little practical treatise of Descartes on logic, entitled, *Rules for the Direction of the Understanding*. This abounds with many general and valuable remarks on the cultivation of the reasoning powers, and on the best modes of strengthening them, and giving them, particularly in early life, a proper direction. He here evinces his dislike to syllogistic forms of argumentation. “Truth,” says he, “often escapes from these fetters, in which those who employ them remain entangled. We frequently witness this in the case of those who make no use of logical forms whatever, experience showing that the most subtle of sophisms delude none but the sophists themselves; never those who trust to the power of natural reason. And to convince ourselves how little this syllogistic art serves towards the discovery of truth, we may remark, that the logicians can form no syllogism with a true conclusion, unless they are already acquainted with the truth that the syllogism develops. Hence it follows, that the vulgar logic is entirely useless to him who would dis-

* Vol. ii., p. 369.

† Lit. Mid. Ages, vol. ii., p. 453.

cover truth for himself, though it may assist in explaining to others the truth he already knows, and that it would be better to transfer it as a science from philosophy to rhetoric.”*

As an example of the many popular observations contained in this work, we shall just quote one, relative to the mode which Descartes himself followed in the acquirement of knowledge—a mode not unworthy of the attention of young men of the present day. The passage is quoted by Mr Hallam for a different purpose; but its intrinsic excellence will support a transference of it to these pages. “I confess,” says Descartes, “that I was born with such a temper, that the chief pleasure I find in study is not from learning the arguments of others, but by inventing my own. This disposition alone impelled me in youth to the study of science; hence, whenever a new book promised by its title some new discovery, before sitting down to read it, I used to try whether my own natural sagacity could lead me to any thing of the kind, and I took care not to lose this innocent pleasure by too hasty a perusal. This answered so often, that I at length perceived that I arrived at truth, not as other men do, after blind and precarious guesses, by good-luck rather than skill; but that long experience had taught me certain fixed rules, which were of surprising utility, and of which I afterwards made use to discover more truths.”

It must be acknowledged, however, that there are some of the rules in this work very loosely stated, and, if carried into practice, would contract human know-

* Vol. ii., p. 255.

ledge to a very great extent. In one place, Descartes counsels us never to trouble ourselves about objects except those which the mind appears capable of acquiring on unquestionable and irrefragable proof. As he was a distinguished mathematician, and considered arithmetic and geometry as affording a species of evidence the most conclusive, he uses language which is apt to lead the reader to conclude, that every other branch of knowledge affords a species of evidence less satisfactory than arithmetical and geometrical relations, and consequently less to be relied on. He says, "From this we may conclude, not that arithmetic and geometry are the only sciences which we must learn, but that he who seeks the road to truth, should not concern himself with any matter of which he cannot have as certain a knowledge as of arithmetical and geometrical demonstrations." If this were Descartes' real opinion, it stands directly opposed to some of the leading canons of his own philosophical method. In fact, if the rule were taken in accordance with its literal meaning, it would cut off nine-tenths of the learning and knowledge of mankind.

In this little treatise there are *twenty-one* rules for the government of the understanding; but the reader will find the first six or seven the most valuable and philosophical in their aim.

Before closing this brief notice of Descartes' logic, I cannot refrain from inserting a few lines from Mr Hallam, who seems to entertain a very high opinion of its general merits. He says, "I consider *The Rules for the Direction of the Understanding*, as one of the best works on logic (in the enlarged sense) which I

have ever read—more practically useful, perhaps, to young students than the *Novum Organum*; and though, as I have said, his illustrations are chiefly mathematical, most of his rules are applicable to the general discipline of the reasoning powers. It occupies little more than one hundred pages; and I think that I am doing a service in recommending it. Many of the rules will, of course, be found in later books; some possibly in earlier.”*

The Cartesian system spread widely after the death of its founder. All the churches and public institutions of learning in Holland, were filled with able men devoted to its leading views and principles. Mr Hallam observes, that “The old scholastic philosophy became ridiculous: its distinctions, its maxims, were laughed at, as its adherents complain; and probably a more fatal blow was given to the Aristotelian system by Descartes than even by Bacon. The Cartesian theories were obnoxious to the rigid class of theologians; but two parties of considerable importance in Holland, the Arminians and the Coccejans, generally espoused the new philosophy. Many speculations in theology were immediately connected with it, and it acted on the free and scrutinizing spirit which began to sap the bulwarks of established orthodoxy.”†

Descartes was viewed, however, by some parties as an obnoxious innovator. The University of Leyden, in 1651, condemned his doctrines, on the ground that they sapped the foundation of Aristotle’s system; and, about the same time, the University of Utrecht made a formal declaration of the same import.‡

* Lit. Middle Ages, vol. ii. p. 456.

† Ibid., vol. iii. p. 316.

‡ Tessel. Hist. Phil. Cartesianæ, p. 55.

It is almost impossible to estimate the amount of influence, direct and indirect, which the logical speculations of Descartes have exercised over the science of method and reasoning since his day. Nearly all the modern theories of truth and evidence touch upon it in some direction or other. Dugald Stewart conceives, that the true philosophy of modern times may be dated from the *Principia* of Descartes rather than the *Novum Organum* of Bacon, or even the works of Locke. Victor Cousin maintains, that Descartes established in France the same method that Bacon did in England; and that he did this with less grandeur of imagination, but with more exactness and precision. "The Cartesian philosophy," says Mr Hallam, "in one sense carried in itself the seeds of its own decline: it was the Scylla of many dogs; it taught men to think for themselves, and to think often better than Descartes had done. A new eclectic philosophy, or rather the genuine spirit of free inquiry, made Cartesianism cease as a sect, though it left much that had been introduced by it. We owe thanks to those Cartesians of the seventeenth century for their strenuous assertion of reason against prescriptive authority; the latter end of this age was signalized by the overthrow of a despotism which had fought every inch in its retreat, and it was manifestly after a struggle on the continent with this new philosophy, that it was ultimately vanquished." *

* Lit. Middle Ages, vol. iii. p. 317.

CHAPTER XI.

LOGICAL SCIENCE FROM DESCARTES TILL THE PUBLICATION
OF LOCKE'S ESSAY IN 1690.

AFTER the writings of Bacon, Hobbes, Gassendi, and Descartes became known throughout the continent and England, logical systems became modified and varied in a surprising manner. This change is less observable in the universities than out of them; but in every direction we find writers intensely occupied in the cultivation of the principles of logical philosophy, and in moulding the formal and educational treatises on the subject into a conformity with the general theories of reasoning adopted by different authors. A love of change seemed to have taken possession of the philosophic mind of Europe.

The predominating phase belonging to the class of writers in this portion of history, is that of seeking out new logical methods of inquiry, which would, in some degree at least, supply the deficiency which arose out of the mere verbal and phenomenal character which logic had assumed from Bacon's time. Principles of logical philosophy had been propounded, which directly

closed the door against theology. In treating of man's moral obligation, in conjunction with religious sentiment and feeling, there was needed a solid and subjective element, altogether apart from mere verbal definitions and external experience, in order to render it intelligible, and to effect the hidden though powerful instincts of the heart. We must see, in fact, the connexion between God and ourselves. This must be brought fairly and directly before us. Looking merely at the outward forms or constitution of things, was not sufficient; the everyday actions and feelings of men were always demanding some comprehensive and general rules of a subjective character, by which they might be measured, guided, and estimated. Logical methods, therefore, which were based on mere verbal arrangements and psychological phenomena, gave only a one-sided and imperfect view of man's nature, and the nature of truth generally. It was from considerations of this kind, that many of the most influential writers we are now about to notice handled the subject of scientific evidence, and attempted to lay down such logical rules as would embrace the abstract principles of theology, as well as those phenomena more directly connected with external nature.

The generality of these logical methods we are now about to sketch, had therefore a threefold object—to shew the connexion of thought with language; to dwell upon physical and mental phenomena as they are developed in our sensational system; and to unfold and bring to open day the fundamental conceptions of Divinity as they lie in the depths of the human heart. It was requisite that each distinct object which these

logical methods embraced, should be individually dwelt upon, and its offices and limitations accurately defined, so that the entire structure of scientific truth and knowledge should be of fair and goodly proportions. Philosophical inquiry was to be unfettered, and science embraced in all its fulness and comprehensiveness; a unity of character was to be impressed upon it, and that unity was to rest on the theological element as its basis. The grand object of all reasoning, as now taught, was to elevate man in the scale of intellectual existence, and to make him a more moral, religious, and happy being than heretofore. This was the burden of all the logical treatises and speculations given to the world at this period, which enjoyed any thing like a general or European reputation or popularity. They aimed at the improvement of the entire man in head and in heart.

Indeed, at no period did the important element of theological authority and sentiment exercise a more marked influence over logical systems than at the present epoch. Religious principles were regularly and systematically incorporated with almost every dialectic method. They formed an essential ingredient in the philosophic mind. They dictated the modes in which truth should be sought after and promulgated. Logic had no limits save the entire science of man in all his relations in life. On the evidence belonging to the several branches of knowledge, springing out of these relations, logical writers spake with authority and power. There was no hesitation or compromise; nor was there allowed any appeal from their decisions. The spirit which animated them sprung from the ennobling

doctrines they espoused relative to the reason or soul of man. They felt it incumbent to raise it from the mire. It had often been made an ignoble thing, and perishable withal; like the leaf that spangles on the tree, now full of beauty and verdure, but soon doomed to fade and drop from its stem, to be again resolved into its original elements. A logic which taught, or attempted to teach, a more elevating doctrine, was therefore received by Christian societies with ardour and gratitude, and as possessing an especial and intense interest in the eyes of those who had the guidance of general education. Man was no longer considered as only a finer specimen of the animal, but had within an immaterial and immortal principle, which the coldness of the grave could not destroy. This was the true secret of that influence which many of the works we are now about to notice exercised over the logical studies and opinions of the world.

And as a necessary consequence, in some measure, of this vigilant search after subjective logical methods, and the desire to render them extensively useful, and to bring them to bear on all departments of human knowledge, was a practice which now sprung up, of expounding logical principles and rules through the medium of some particular subject or science. Some writers took mathematics, some law, some divinity, and some the interpretation of Scripture facts and doctrines.

GODFREY WILLIAM LEIBNITZ.—Few names in modern philosophy have been more influential on logical science than that of Leibnitz, especially in Germany and the north of Europe. His speculations, though of a general

and abstruse character, have nevertheless a pointed reference to the great questions connected with scientific truth and certainty. His logical investigations are, however, so much mingled with mental theories and discussions, as to render it a difficult matter to separate the former from the general mass of his philosophy, and present them, in all their unalloyed purity, to the attention of the general reader. Wherever we cast the eye over his productions, we meet with the hypothetical element in rich and varied abundance.

To a certain extent Leibnitz was an expounder of the Cartesian philosophy; but his theory of the universe leads to conclusions very different from the theory of Descartes. The monads, or ultimate atoms of Leibnitz, play an important part in his cosmogony; and all his speculations on the nature of scientific truth, have a close affinity with the doctrines involved in this peculiar theory. A knowledge of it is certainly desirable, in order to see the nature of his logical views; but its development requires more space than is at our command. We must therefore attempt to make his notions on the nature of reasoning somewhat intelligible, without going over the entire range of his philosophy.

According to Leibnitz, all rational perceptions are connected together by a law which is superior to that of memory. This law rests, however, on two principles, and these form the basis of every species of reasoning or dialectic argumentation. The one principle is the *sufficient reason*, and the other the principle of *contradiction*.

By the principle of the sufficient reason, we consider

that no fact can occur without reason sufficient for its occurrence in a particular manner, rather than otherwise. All theories or arrangements of facts rest upon this principle.

The principle of contradiction enables us to mark and distinguish what is false or untrue; because whatever implies at one and the same time an affirmation and a negation, involves a contradiction—as if, for example, we were to affirm that the same thing could be and not be at the same moment. This principle of contradiction is the principle of identity, and the basis on which all necessary truths rest.

The principle of sufficient reason deals with facts, and the principle of contradiction with indemonstrable truths. Apparently these two principles are distinct when considered in reference to two different species of knowledge; yet the one is derived from the other. The necessity of a sufficient reason for every thing which exists, is itself a necessary or fundamental truth in all reasonings, because the negative of it cannot be conceived. Ultimately, therefore, the principle of contradiction is the sole and common root from which all scientific truth springs.

These principles, developed by great talent and original genius, extended themselves in every direction throughout Germany and other neighbouring states, and exercised a marked influence over logical studies and systems of logic very soon after their promulgation.

In respect to the syllogistic mode of reasoning, Leibnitz expresses himself a qualified admirer of it. In his criticisms on the observations which Locke made upon it, he maintains that, though he agreed in the

main with the English philosopher's statements, he still thought that the syllogism ought not to be indiscriminately condemned. It has its value chiefly as an instrument of classification, and for the prompt and ready disposal of knowledge previously obtained or agreed upon by disputants. Even if it be admitted that men ignorant of artificial logic, reason sometimes more promptly and correctly than those intimately skilled in it; yet this does not prove its absolute inutilty, any more than because we occasionally find persons quick and correct at arithmetical accounts, who nevertheless know scarcely any thing of formal figures, that therefore the science of numbers is of little use. Syllogisms have undoubtedly been greatly abused, and too often made the instruments of ingenious trifling and sophistication; but still they may prove advantageous in quickening the faculties of the mind, and imparting to them a vigour and energy which they would not otherwise possess.

LORD HERBERT of Cherbury was a speculative logical writer of this period of some note and eccentricity. His general views were decidedly sceptical as to the nature and extent of general evidence; but his influence on the current of philosophic thought has hitherto been but slender and limited.

His lordship's work, *De Veritate* (1624), is an attempt to point out the sure means of discerning and discovering truth,—distinguishing, however, the truth from revelation, from probability, from possibility, and from falsehood. General or absolute truth rests upon seven fundamental axioms,—1st, Truth exists; 2nd, It is coeval with the things to which it relates; 3d, Its

existence is every where ; 4th, It is self-evident ; 5th, There are as many different truths as there are differences among things ; 6th, We recognise these differences by our natural faculties ; and, 7th, There is a general truth attached to all these several truths. An analysis of these axioms gives the following results :—All truth is distinguished into the truth of the thing or object,—the truth of appearance, the truth of perception, and the truth of the understanding.

The powers of the human mind being limited, we can only know or grasp the truth of things in a corresponding degree. There must be a given or determined relation between the truth of things as they are in themselves and our intellect ; but this relation is not always an object of accurate perception. In order to seize it in all its totality or unity of being, it requires we should know all the properties of things, which knowledge is denied us. A conditional or limited view of this relation is therefore all we can obtain ; and this depends upon three principles,—1st, That objects be neither immensely large or minutely small ; 2nd, That every object should have its principle of difference, or its individuality, distinctly marked out from other things with which it may be connected ; and, 3d, That this individualization should be in accordance or harmony with some sense or perceptive organ. All truth must rest upon these primary conditions.

All the faculties of the human soul, so far as the discovery and appreciation of truth is concerned, are four—instinct, internal perception, external sensation, and reason.

BLAISE PASCAL.—Pascal is not a regular logical

writer, but he has treated of some of the principles of reasoning in a way which has excited the attention of many eminent logicians since his day. He says but little, but that little is of weighty import.

He had meditated long and deeply on the nature of truth in every department of human knowledge and speculation, and had fixed in his own mind the precise amount of evidence which each science yielded. In point of logical certainty, he gave the preference to geometry, because, he says, geometers are the only reasoners who always keep the true laws of demonstration uniformly before them. These, according to his system of classification, are eight in number. 1st, To define nothing which cannot be expressed in clearer terms than those in which it is already expressed; 2nd, To leave no obscure or equivocal terms undefined; 3d, To employ in the definition no terms not already known; 4th, To omit nothing in the principles from which we argue, unless we are sure it is granted; 5th, To lay down no axiom which is not perfectly self-evident; 6th, To demonstrate nothing which is as clear already as it can be made; 7th, To prove every thing in the least doubtful by means of self-evident axioms, or of propositions already demonstrated; 8th, To substitute mentally the definition instead of the thing defined.

Pascal affirms that the first, fourth, and sixth rules are not absolutely requisite to avoid erroneous conclusions, but the other five rules are indispensable. He also remarks, that although they may be found in our ordinary books of logic, yet none but geometers have recognised their importance, or been guided by them.

All other rules than those now given are mischievous or useless; they embody, he maintains, the entire art of demonstration.*

THE PORT-ROYAL LOGIC.—The work which goes under this name forms an important landmark in modern logical science. It was the production of several writers—Arnauld, Nicole, Sacy, Lancelot, and others; but chiefly the two first. Indeed, according to the manuscript of the younger Racine, they were the sole writers of it; for it is there stated, that the dissertations and additions are by Nicole; the first parts are by Arnauld and Nicole together; and the fourth, *On Method*, by Arnauld alone. The first edition appeared in 1662, under the following title:—*La Logique, ou l'Art de Penser; contenant outre les Regles communes, plusieurs Observations nouvelles, propres à former le jugement.*

It is stated in the advertisement, that its production arose from the following circumstance:—In the course of a conversation, it was mentioned as a somewhat remarkable thing, that a person had made himself well acquainted with the greater part of logic in fifteen days. This led one of the company to remark in a sportive mood, that if Mr So-and-so would take the trouble, he would engage to learn him all that was really useful in logic in four or five days. From this random proposal it was resolved to make the attempt. An abstract of the science was determined upon, which, it was thought, would not occupy more than one day; but, instead of this limited time, it took four or five days, and at the end of this period the work was sub-

* Œuvres. i. 66.

stantially finished, nearly in the state we now have it. The treatise has been translated into nearly every language in Europe.*

The following is the definition of logic given by the authors of the Port-Royal:—"Logic is the art of directing reason aright in obtaining the knowledge of things, for the instruction both of ourselves and others. It consists of the reflections which have been made on the four principal operations of the mind—*conceiving, judging, reasoning, and disposing.*"

The logic of the Port-Royal is divided into *four parts*.

I. *Containing reflections on Ideas, or on the first operation of the mind, which is called conceiving.*—This part embraces the nature and origin of our ideas—their relation to their objects—the ten categories of Aristotle—the ideas of *things* and *signs*—ideas relative to their simplicity or composition—of ideas relative to their generality, particularity, and singularity—of genus, species, difference, property, and accident—of complex terms, universal and particular—of clear and distinct, of obscure and confused ideas—examples of these from morals—of the causes of confusion and obscurity of our thoughts and discourses—of the nature and influence of definition, and of the ideas which the mind adds to those which are expressed by words or signs.

Part II. *Containing the reflections which men have made on their judgments.*—This section of the work contains the nature of words relative to propositions—of the verb—of what is implied by a proposition—of simple, accidental, and compound propositions—of the

* There are three English translations of the work ; one in 1680, another in 1716, and the third by Mr Baynes, 1850. I have quoted from the last.

falsity incident to complex propositions—of affirmation and negation, subject and attribute, relative to propositions.

Part III. *Reasoning*.—The nature of reasoning—the syllogism—rules relative to its figures and modes—of sophistical and bad reasoning in civil life and in common discourse.

Part IV. *Of Method*.—What is implied in this—two kinds of it—method of composition—method of geometers, axioms, demonstration—method of the sciences—what can be known by faith, human and divine—rules for the direction of reason—of the judgments we should form relative to future events.

Arnauld's system of reasoning is essentially an exposition of Descartes' doctrines on the same subject, though there was a difference between these two philosophers on some matters of minor import. The word *idea* is used in the Port-Royal logic in its widest and most common acceptation; standing for notions, perceptions, images, volitions, conceptions, desires, &c. This is an important point to be kept in view, in judging of the nature and merits of this celebrated and popular treatise.

The great end of all logical studies is, according to Arnauld, to perfect our judgments on subjects connected with human nature—to view man aright in his several relations, as a moral, political, and religious being. This is emphatically dwelt upon in the following observations:—"The main object of our attention should be, to form our judgment, and render it as exact as possible; and to this end the greater part of our studies ought to tend. We employ reason as an

instrument for acquiring the sciences ; whereas, on the contrary, we ought to avail ourselves of the sciences as an instrument for perfecting our reason—justness of mind being infinitely more important than all the speculative knowledge which we can obtain by means of sciences the most solid and well established. This ought to lead wise men to engage in these only as far as they may contribute to that end, and to make them the exercise only, and not the occupation of their mental powers.

“ If we have not this end in view, the study of the speculative sciences, such as geometry, astronomy, and physics, will be little else than a vain amusement, and scarcely better than the ignorance of these things, which has at least this advantage—that it is less laborious, and affords no room for that empty vanity which is often found connected with these barren and unprofitable knowledges. These sciences not only have nooks and hidden places of very little use ; they are even totally useless, considered in themselves and for themselves alone. Men are not born to employ their time in measuring lines, in examining the relations of angles, and considering the different movements of matter—their minds are too great, their life too short, their time too precious, to be engrossed with such petty objects ; but they ought to be just, equitable, prudent, in all their converse, in all their actions, and in all the business they transact, and to these things they ought specially to discipline and train themselves. This care and study are so very necessary, that it is strange that this exactness of judgment should be so rare a quality.”*

* Discourse I.

The Port-Royal logic was one of the boldest attempts to overthrow the Aristotelian system that had been made up to the time of its publication; and its antipathy to that system is more decided and general than what at first sight appears from the work itself—inasmuch as the syllogistic rules are retained and given at full length. But this is evidently done under the impression that it would not have been prudent to carry opposition to a greater extent. The whole of the chapters of the work, from the third in part third, to the twelfth, are considered as consisting of matters of no practical utility. These contain the rules for the various modes and figures of the syllogism. The authors say in reference to these—"More of doubt arose in relation to certain matters difficult enough and but of little use—such as the conversion of propositions and the demonstration of the rules of figure; but we have determined not to omit them, since their very difficulty is not altogether without its use."

The ten categories are given at length in the work; but the authors remark that "these are the ten categories of Aristotle, about which there has been so much mystery, although in truth they are in themselves of very little use; and not only do not contribute much to form the judgment, which is the end of true logic, but often are very injurious, for two reasons,—First, we regard the categories as something founded on reason and truth, whereas they are altogether arbitrary, and are founded only in the imagination of a man who had no authority to prescribe a law to others; and the second reason which renders the study of the categories dangerous is, that it accustoms men to satisfy

themselves with words, and to imagine that they know all things, when they know only arbitrary names, which form in the mind no clear and distinct idea of the things.”*

The fourth part, on method, is a valuable portion of the work. Pascal’s rules of evidence are here adopted, but enlarged and illustrated at greater length. Method is considered one of the most useful and important portions of logical science. It substantially consists of a series of several reasonings, by which we incontestably prove some truth.

“The Port-Royal logic,” says Mr Hallam, “though not perhaps very much read in England, has always been reckoned among the best works in that science, and certainly had a great influence in rendering it more metaphysical, more ethical (for much is said by Arnauld on the moral discipline of the mind, in order to fit it for the investigation of truth), more exempt from technical barbarisms, and trifling definitions and divisions. It became more and more acknowledged, that the rules of syllogism go a very little way in rendering the mind able to follow a course of inquiry without error, much less in assisting it to discover truth; and that even this vaunted prerogative of securing us from fallacy is nearly ineffectual in exercise. The substitution of the French language in its highest polish, for the uncouth Latinity of the Aristotelian, was another advantage of which the Cartesian school legitimately availed themselves.”†

M. Crousaz observes in his *Logic*, that the Port-Royal logic exercised a more powerful influence in reforming

* Part I., chap. iii.

† Lit. Middle Ages, vol. iii. p. 322.

academical instruction throughout the whole continent of Europe, than the writings of either Bacon or Descartes. We may also add the testimony of Stewart, who says, "No publication, certainly, prior to Locke's *Essay*, can be named, containing so much good sense, and so little nonsense on the science of logic; and very few have *since* appeared on the same subject, which can be justly preferred to it in point of practical utility."*

FATHER MALEBRANCHE.—This philosopher based his logical evidence upon theology. His *Recherche de la Vérité* was published in 1674, and excited considerable attention among the scientific men of Europe.

The grand principle of his system is, that we see all things in God. In this he follows the example of Descartes and many others; only he works out the problem in a very original and talented manner. All scientific truth must ultimately rest upon an infinitely true and perfect being; no other foundation is conceivable. This idea of the Divine nature implies, on the one hand, the existence of its object; and, on the other, all the individual ideas, which can never be any thing else save particular aspects or phases of the One universal idea of being. "The union," says he, "of the soul to God, is the sole means by which we acquire a knowledge of what is true. This union has, however, been rendered so obscure by our original transgression, that few can understand what is implied by it—to those who are blindly led by the dictates of sense and passion, it appears imaginary. The same cause has so strengthened and fortified the connexion between the

* Dissert., p. 80.

soul and the body, that we consider them as one substance, of which the latter portion is the principal part. It is from this reason that we may be all apprehensive that we do not clearly distinguish the confused sounds with which the senses fill the imagination, from that pure voice of truth which speaks to the soul. The body speaks in a tone louder than God himself; and our pride makes us presumptuous enough to judge without waiting for those words of truth, without which we cannot really judge at all."

The work is divided into six books. The five first are devoted to pointing out the errors of judgment arising out of the senses, the understanding, the imagination, the natural inclinations or desires, and the passions. The sixth book contains the logical method of avoiding these.

The Aristotelian logic, though rapidly falling into discredit among enlightened laymen in almost every country in Europe, had still a numerous host of firm and zealous friends in most of the universities, and particularly in the bosom of the Catholic Church generally. The theories of Descartes and Leibnitz, the common-sense views of Arnauld, and the philosophy of Bacon, were making a deep impression among thinking men in every direction; but in proportion as this innovating spirit gained strength, in the same ratio did alarm spread itself among the advocates of the purely syllogistic theory. The Jesuits were conspicuously active in retaining the ancient method of instruction; and the Sorbonne of Paris, in 1693, raised its voice in their behalf, by ordering Aristotle to be maintained in all his integrity and power.

These conflicting opinions gave rise to various logical speculations, having for their ostensible object a reformation of the science to some extent, but the real aim of which was to give support to one or other of the leading systems which divided the philosophical opinion of Europe. The religious element predominated in most of these logical publications, though there were exceptions of a sceptical cast to the generality of the rule.

Edward Digby wrote his *De Duplici Methodo libri duo, unicam P. Rami Methodum Refutantes*, in 1589; a work of considerable merit. The main object of it is, to point out the advantages of method in the exposition of those principles and rules which lead the mind to sound reasoning. His views on this subject are very much in unison with those developed by James Concio, already noticed. Thomas White, a Roman Catholic clergyman, argues for the supremacy of the syllogistic theory, and maintains that it is admirably calculated to promote sound knowledge. His observations are contained in a work, entitled, *An Exclusion of Sceptics from all title of dispute; being an Answer to the Vanity of Dogmatizing*. White taught publicly at Lisbon, Douay, Rome, and Paris. Joseph Glanvil, the author of *The Vanity of Dogmatizing* (1661), against which White directs his censures, has a violent attack upon the Aristotelian logic, which, it is affirmed, is nothing but a play upon words. "It tells us nothing," says the author, "but what a child may understand." This publication was afterwards entitled *Sceptis Scientifica*; and has received the high commendation of Dugald Stewart, who observes, that it is "one of the

most acute and original productions of which English philosophy had then to boast.”* Glanvil likewise stigmatizes the system of Aristotle in severe terms, in his *Plus Ultra, or the Progress and Advancement of Knowledge since Aristotle* (1668). His own views on the nature of scientific truth may be gathered from the following observations:—“The philosophy that must signify either for *light* or *use*, must not be the *work* of the *mind* turned in upon *itself*; but it must be raised from the *observations* and *applications* of *sense*, and take its account from things, as they are in the *sensible world*. The illustrious Lord Bacon hath noted this as the chief cause of the unprofitableness of *the former methods of knowledge*, namely, that they were but the *exercises* of the *mind*, making *conclusions*, and spinning out notions from its own *native store*; from which mode of proceeding nothing but *dispute* and air could be expected.”†

Sir Kenelm Digby, grandson of Edward Digby, just noticed, was a stout defender of the Aristotelian logic. His opinions on this subject will be found in his *Institutiones Peripateticæ*. John Norris, in his *Essay towards the Theory of the Ideal or Intelligible World*, endeavoured to illustrate the logical philosophy of Plato, relative to general *truths* and *essences*. In this he follows the footsteps of Malebranche. Wallis's work, *Institutio Logicæ ad Communes Usus Accommodata* (1687), became generally well known among logicians in England. And Oldfield's *Essay towards the Improvement of Reason*, founded upon some of the logical principles of the Port-Royal, obtained some

* Dissert., p. 247.

† Plus Ultra, p. 52.

limited notice in its day. About this time appeared Aldrich's *Compendium Artis Logicæ*. We have the *Artis Logicæ* of the immortal John Milton, who defines logic to be "the art of reasoning well." His work is divided into two parts; the one relates to the nature and invention of different kinds of arguments, and the other to the disposing of them in formal order. The last division is worked out in conformity to the logical views of Peter Ramus. Method, Milton says, is of vital moment in logic.

Fran. Burgersdicius was a distinguished logician at this period, and published his *Instit. Logicæ ad Aristotelis præcepta Concinatæ* at Cambridge in 1647, and at Geneva in 1651. Smiglecius likewise obtained no inconsiderable reputation in the path of logical literature.* Louis de la Forge examines the nature of truth through a Cartesian medium in his *Traité de l'Esprit de l'Homme* (1666). Of what does knowledge or truth consist? He answers the question thus: "To know is simply to perceive that which is internally represented in the mind." Innate ideas are of three classes—the substance which thinks, the substance which is extended, and the third is a composition of both. Pierre Sylvain Regis followed nearly in the footsteps of De la Forge. The logic of Regis will be found in his *Système de la Philosophie* (1690). At the commencement he states, "All I have said being due to M. Descartes, whose principles and method I have followed even in explanations that are different from my own." In accordance with his master, he tells us that all knowledge from reasoning is acquired "by a simple and internal in-

* "La Logique de Smiglecius est un bel ouvrage."—*Rapin*.

tuition, which precedes all acquired knowledge, and which I call consciousness." In the author's logic, he professes to be guided by the doctrines of the Port-Royal, although he does not give any account of the figures and modes of the syllogism.* Huet, Bishop of Avranches, discusses several of the leading principles of logic in his several works, *Traité Philosophique sur la Faiblesse de l'Esprit Humain*, *Demonstratio Evangelica*, *Quæstiones Alnetanæ*, and the *Censura Philosophiæ Cartesianæ*. Huet's notions of scientific evidence inclined to scepticism. "We demand," says he, "a *criterium* of truth—a sign, a stamp to which conviction shall be attached. But where is this *criterium*? It is not in man, and nature declares she knows nothing of it. It cannot be in the instruments we use, for our senses and imagination deal only in deceptive impressions; and the understanding and reason offer no grounds for certainty, since they are both a hidden mystery to us. Nor need we look for it in the active energy of the mind itself. In fine, to obtain a *criterium* of truth, we must previously know what truth is; whilst again, to know truth, we should still require a *criterium*. Of what importance is a rule, if it be not a right one? And how can we know it is right?"†

We find a portion of the same scepticism in the *Dissertation sur la Recherche de la Vérité, ou sur la Logiques des Académiciens* of the Abbé Foucher. He also maintains the doctrine that there are no necessary

* "Nous ne dirons rien des figures ni des syllogismes en général: car bien que tout cela puisse servir de quelque chose pour la spéculation de la logique, il n'est au moins d'aucun usage pour la pratique, laquelle est l'unique but que nous nous sommes proposés dans ce traité."—P. 37.

† *Traité*, ch. 8.

truths connected with the sciences of *physics* and *morals*; they are only to be found in mathematics, and in the demonstrations of the existence of a Deity. The logical opinions of P. Marsenne will be found in his work, *La Vérité des Sciences contre les Sceptiques*. As an antidote in some measure to the doubt pervading some of these speculations, we have the treatise of Jerome Hirnhaim of Prague, entitled, *De la Certitude des Connaissances Humaines* (1671). He maintains that all the reasonings of men are grounded upon a few elementary principles of an intuitive character,—as the belief of our own existence, the faith in the testimony of others, and the firm conviction of our perceptions of right and wrong.*

David Derodon was a logician of great eminence in his day. He taught logic in several universities in France, but ultimately settled at Geneva, where he officiated for many years as professor of philosophy. His general principles of logic are founded on Aristotle's system, which, viewed as a whole, he considers based on incontestable evidence. Being, however, of an original and independent mind, Derodon did not take the commonly received doctrines of reasoning for granted, but urged many special grounds of dissent from some notions prevalent in his time. The most important of these related to the predicaments, to the definitions of universals, to the nature of genus and species, and to the discrepancies of opinion on some points of little importance, between Aristotle and the logical views of Plato, Democritus, and Epicurus.† About the same time Duhamel flourished, who likewise

* De la Certitude, chap. vii.

† Logica, Part. i. 2, 5.

proved himself a profound logician, and who was appointed secretary to the French Academy at its establishment. His work, *Philosophia Vetus et Nova ad Usus Scholæ Accommodata* (1684), contains many valuable observations on the art of reasoning. He thinks Bacon's inductive method not altogether satisfactory, chiefly on the ground that induction, from its very nature, must prove a fallacious guide in many instances by the imperfect manner it is performed by the mass of mankind. Duhamel conceives that the best logical method, both for the discovery and promulgation of truth, is to combine, in fair proportions, theoretical with practical knowledge. They ought always to go hand in hand in the study of nature. "Investigations of causes," says he, "is confirmed by experience; but experiments by themselves are often only blind and fortuitous kinds of things, unless there be some light thrown on their causes."

The "logic" of Peter Bayle is contained in the fourth volume of his collected works, and is given in Latin and French. He defines logic to be "the art of forming those instruments which guide us to truth." His views on logic as a science are compounded of the opinions of Aristotle and Descartes. He ends his work with a short chapter on *method*, which contains some sound remarks on giving our argumentative labours a fixed and determinate direction. His constitutional scepticism is discernible, however, in many portions of the *Logique*; and in his other treatises we see evident signs how prone his mind was to toy with subtle and extralogical questions. A striking instance we have of this in his *Dictionary*, under the article "Chrysippus."

“What is it, said some of the ancient sophists, which constitutes what we call little, much, long, broad, small, or great? Do three grains of corn make a heap? The answer must be—no. Do four grains make a heap? You must make the same answer as before. They continued their interrogatories from one grain to another without end; and if you should happen at last to answer, ‘Here is a heap,’ they pretend your answer was absurd, inasmuch as it supposed that one single grain makes the difference between what is a heap, and what is not. I might prove by the same method, that a great drinker is never drunk. Will one drop of wine fuddle him? No. Two drops, then? By no means; neither three nor four. I might thus continue my interrogatories from one drop to another; and if, at the end of the nine hundred and ninety-ninth drop, you answered, He is not fuddled, and at the thousandth, He is, I should be entitled to infer that one single drop of wine makes the difference between being drunk and being sober—a most absurd proposition. If the interrogations went on from bottle to bottle, you could easily mark the difference in question. But he who attacks you with a *sorites*, is at liberty to choose his own weapons; and, by making use of the smallest conceivable increments, renders it impossible for you to name a precise point which fixes a sensible limit between being drunk and being sober; between what is enough, and what is too much. A man of the world would laugh at these sophistical quibbles, and would appeal to *common sense*—to that degree of knowledge which, in common life, is sufficient to enable us to establish such distinctions. But to this tribunal a

professed dialectician was not permitted to resort ; he was obliged to answer in form ; and, if unable to find a solution according to the rules of art, his defeat was unavoidable. Even at this day, an Irish tutor who should harass a professor of Salamanca with similar subtilities, and should receive no other answer except this—*Common sense, and the general consent of mankind, sufficiently shew your inferences are false*—would gain the victory ; his antagonist having declined to defend himself with those logical weapons with which the assault had been made.”

Bossuet's logical opinions had some influence in his day, chiefly among the most refined and philosophical of the French clergy. His *Logique* is divided into three books, in accordance with the three powers or faculties of the understanding—conception, judgment, and reasoning. There are general precepts given at the end of each book for the guidance of the mind in its pursuit of knowledge. The work was composed for the Dauphin of France, and is written in a very plain and popular style. He defines truth to be that which exists, and falsehood that which has no existence. Truth being eternal, it must of necessity rest upon Deity. All necessary truths and principles existed prior to the human understanding ; and consequently we can only be said to *find truths*, not to *create them*. Huygens, professor of logic in the University of Louvain, and the celebrated Fénélon, entertained nearly the same notions of the philosophy of logic as Bossuet did. They both argue for the intuitive nature of all our primary maxims of reasoning, and that the idea we entertain of the absolutely true, is intimately and neces-

sarily connected with our general conceptions of a Divine and Intelligent power. Fontenelle's view of logical truth did not differ widely from those of the three last-named authors. In his *Fragments on Human Reason, the Human Mind, and Instinct*, he lays down the proposition generally, that any cumbrous dialectical framework is calculated to retard rather than advance our knowledge and intellectual improvement. His opinion is, that all universal propositions and scientific maxims are the result of often repeated experiments or observations. *Necessary truths* he terms *natural axioms*. These natural axioms constitute the basis of all human reasoning, and may be divided into two great classes—those which are derived from the external world, and those appertaining to our internal nature. What Fontenelle calls the *laws of thought*, seem to be of the same character as those subsequently developed by the *common sense* school of philosophy.

The Abbé Mariotte's work, *Essai de Logique, Contenant les Principes des Sciences* (1678), contains excellent illustrations of those principles on which the certainty of human knowledge is based; and the same thing may be said of several other French works on logic, which appeared at, or a little before this time.

The logical works of Italy and Spain at this period are not of a character to require any special enumeration. In Spain particularly, every thing remained just as it was in the days of Thomas Aquinas. No new or foreign element had been introduced into the formal treatises appropriated to logical education. Rapin even affirms, that the logicians of this country had made, for the last two centuries, a decidedly retrograde

movement, instead of advancing, by the practice of introducing into logic a great number of childish and frivolous questions and subtilties, which had no other effect than to bewilder the intellect.

In the north of Europe logical studies were prosecuted with ordinary diligence. There were several works of importance published in Sweden during the seventeenth century. In 1623 we have Alexander Kempe discussing the merits of Aristotle's logic, and, on many vital points, calling its validity in question. He argues that the syllogism is too slender a basis for rational argumentation. He is followed by Joh. Chesneiopherus in 1629, who, in his *Logica*, incorporated many of the notions of Ramus. P. Aurivillius defended the logic of Aristotle, and stoutly maintained it was the only safe guide to the understanding. Enander, in 1640, became a very popular lecturer on logic, and partially made known some of the peculiar views of Bacon and Descartes on the subject. Students from the remotest parts of the kingdom came to hear him. His rival was J. Boëthius, a professor of logic. Forsius and George Olavi were dialecticians of a mystical character. The logical works of Laurens, Javelin, and Gezelius, are purely treatises of a formal or scholastic order.

In Holland and Belgium we have the following authors, among many others, who cultivated logic :—Joh. Schalerus, P. Nannius, P. Cornelius Brederod, Martinus Schookius, M. Paludanus, Baldinus Junius, Gerardus de Boot, Guil. Philippi, Jacob Speecq, A. Verhel, Anth. Senguerdius, A. Deusingham, Gisb. ab Ysendoorn, and Cornelius ab Hooghelande.

CHAPTER XII.

THE LOGICAL PRINCIPLES OF LOCKE.

IT may safely be affirmed, that Locke's *Essay on the Human Understanding* (1690), has given birth to a more diversified series of logical systems and speculations, as well as modes of tuition, than any other single work since the days of Aristotle. Though not professedly a logical treatise, yet it contains so many views and facts connected with the reasoning process, and has proved so suggestive to the minds of men, relative to the government of the understanding, that novel logical doctrines and systems have sprung up on all sides of us, from the publication of the *Essay* till the present day. It has been the great dialectical innovator for nearly two centuries—aiming at the solution of all problems on the broad principles of common sense and common reason, arising out of the varied and subtle movements of the reasoning faculty.

Locke's influence over the logical studies of modern times, has arisen chiefly from two sources—the one metaphysical, and the other dialectical. The mental powers are so minutely analysed, so accurately and

plainly mapped out, that the entire structure of the inward man is laid bare to every inquirer; and then again, the logical apparatus which moved, guided, and directed the individual parts to their several offices and ends, was so simple and effective, and so much in unison with the everyday current of thought, that men have been led to think that every thing necessary to be known was to be found in the *Essay*, and nowhere else. By a single sentence or a passing remark, he sometimes throws a flood of light upon some logical precept, and shows its relation to the entire economy of the reasoning faculty. Then, again, he deals with the science or art of argumentation in its widest signification—pointing out the most striking phenomena—harmonizing scattered and disjointed facts—and guiding the judgment to some important generalization or abstract truth.

It is not necessary to give more than a brief outline of so well-known a book as the *Essay on the Human Understanding*. And this outline must also be limited to that portion of the *Essay* which directly bears upon logical principles and rules. With the philosophy of the treatise, properly so called, we have nothing to do, further than to obtain that very general conception of its character and scope, which is absolutely necessary to a ready comprehension of the author's logical theory.

The mental philosophy of Locke is based upon two principles—the *origin of our ideas*, and the *principle of human knowledge*,—that is, the agreement of ideas with objects.

There are two sources of the origin of our ideas—

sensation and reflection. All ideas of things distinct from the thinking subject are derived from sensation, or the effects of external bodies upon our several senses of seeing, hearing, tasting, smelling, and touching.

All ideas of the modes of being, or of the operations of the intellect—such as ideas of *perception, thought, doubt, belief, knowledge, will, reasoning, intelligence*, and the like—are derived from the power of reflection.

The principle of knowledge, or the correspondence of ideas with things, embraces that portion of the author's speculations which have a direct reference to logical systems.

Locke defines *knowledge* to be the perception of the agreement or disagreement of our ideas. It can be viewed in three different aspects,—1st, In reference to its objects ; 2nd, In reference to its nature ; and, 3dly, In reference to its origin.

Knowledge, in reference to its objects, is of four kinds,—1st, A knowledge of identity and diversity ; 2nd, A knowledge of relation ; 3d, A knowledge of co-existence ; and, 4th, A knowledge of real existence.

Knowledge, in reference to its nature, is of two kinds—actual and habitual.

Knowledge, in reference to its origin, is of three kinds—intuitive, demonstrative, and sensitive.

Locke prescribes the limits of human knowledge in this manner:—1st, We have knowledge no further than we have ideas ; 2nd, We have knowledge no further than we have perceptions of the agreement or disagreement of these ideas ; and, 3d, That this perception is either by intuition, demonstration, or sensation.

Truth is defined by Locke to be the joining or separating of signs, according as the things signified by these signs agree or disagree among themselves. He again divides truth into two kinds—moral and metaphysical. Moral truth consists in speaking as we think, whether the thing spoken of be as we state or not. Metaphysical truth is, when thought corresponds with the real existence of things.

A *proposition* is defined to be a sentence affirming the agreement or disagreement of two ideas—such as, Plato was a philosopher; white is not black. Every proposition consists of three members,—namely, the subject, the predicate, and the copula.

Judgment and *probability* are two important instruments in Locke's logical system. Judgment is defined to be the joining or separating ideas, as they are *presumed*, not perceived, to agree or disagree. Probability consists in the appearance of agreement or disagreement of ideas through the means of other intermediate ideas, whose connexion is not invariable, but only more or less frequent.

Probable evidence forms the greatest portion of all the evidence we have for the truth of any thing. It is based on two principles—experience and testimony.

Experience is of two kinds—partial and general; and testimony is regulated by six distinct circumstances, namely,—1st, The number of the witnesses; 2nd, Their integrity; 3d, Their skill or knowledge; 4th, Their intention or aim; 5th, The consistency of their relation; and, 6th, Contrary testimony.

Reason is treated of by Locke at considerable length. All reasoning consists of four parts or elements,—1st,

The finding out of proofs ; 2nd, The disposing of them in proper order ; 3d, The perceiving of their mutual connexion ; and, 4th, The making a right use of them.

It is in this division of his work that he treats of the syllogistic logic. Of the syllogism generally, he says, "It serves our reason but in one only of the forementioned parts of it ; and that is, to show the connexion of the proofs in any one instance, and no more : but in this it is of no great use, since the mind can conceive such connexion where it really is, as easily—nay, perhaps better—without it." "If we will observe the actings of our own minds, we shall find that we reason best and clearest when we only observe the connexion of the proof, without reducing our thoughts to any rule of syllogism." . . . "All who have so far considered syllogism as to see the reason why, in three propositions laid together in one form, the conclusion will certainly be right, but in another not certainly so, I grant are certain of the conclusion they draw from the premises in the allowed modes and figures. But they who have not so far looked into these forms, are not sure by virtue of syllogism that the conclusion certainly follows from the premises—they only take it to be so by an implicit faith in their teachers, and a confidence in those forms of argumentation ; but this is still but believing, not being certain. Now if, of all mankind, those who can make syllogisms are extremely few in comparison of those who cannot—and if, of those few who have been taught logic, there is but a very small number who do any more than believe that syllogisms in the allowed modes and figures do conclude right, without knowing certainly that they do so—if syllogisms

must be taken for the only proper instrument of reason and means of knowledge—it will follow, that before Aristotle there was not one man that did or could know any thing by reason; and that, since the invention of syllogisms, there is not one of ten thousand that did.”

“God has not been so sparing to men to make them barely two-legged creatures, and left it to Aristotle to make them rational,—that is, those few of them that he can get to examine the grounds of syllogisms as to see, that in about threescore ways that three propositions may be laid together, there are but fourteen wherein one may be sure that the conclusion is right. God has been more bountiful to mankind. He has given them a mind that can reason without being instructed in methods of syllogism.”

“Of what use,” says he again, “then, are syllogisms? I answer, their chief and main use is in the schools, where men are allowed without shame to deny the agreement of ideas that do manifestly agree; or, out of the schools, to those who from thence have learned without shame to deny the connexion of ideas, which even to themselves is visible. But to an ingenuous searcher after truth, who has no other aim but to find it, there is no need of any such form to force the allowing of the inference; the truth and reasonableness of it is better seen in ranging of the ideas in a simple and plain order. And hence it is that men in their inquiries after truth never use syllogisms to convince themselves.” “Rules of syllogism serve not to furnish the mind with those intermediate ideas that may show the connexion of remote ones. This way of reasoning discovers no new proofs, but is the art of marshalling

and ranging the old ones we have already." "A man knows first, and then he is able to prove syllogistically. So that syllogism comes after knowledge, and then a man has little or no need of it." *

Again he says, "Having here had an occasion to speak of syllogism in general, and the use of it in reasoning and the improvement of our knowledge, it is fit, before I leave this subject, to take notice of one manifest mistake in the rules of syllogism,—namely, that no syllogistical reasoning can be right and conclusive but what has at least one general proposition in it. As if we could not reason, and have knowledge about particulars; whereas in truth, the matter rightly considered, the immediate object of all our reasoning and knowledge is nothing but particulars. Every man's reasoning and knowledge is only about the ideas existing in his own mind, which are truly, every one of them, particular existences; and our knowledge and reason about other things is only as they correspond with those of our particular ideas." †

The logical theory of Locke may, I conceive, be substantially and fairly illustrated in the following manner:—It consists of three divisions or members—ideas, faculties, and reason or intelligence. He considers ideas as the raw material out of which propositions and arguments of every kind spring. Hence his maxim, that the more ideas a man has, the more soundly and comprehensively is he likely to reason. He considers them as the foundation of all logical operations; and to have correct conceptions of their various orders and

* Essay, ~~chap. xvi.~~ Bk. 4, Ch. 17. † Book IV., chap. xvii.

chief characteristics, is a necessary preliminary to every rational movement of the mind.

The author having fixed the science of reasoning on ideas, he next directs attention to the faculties or powers of the mind. These are the instruments which operate on ideas. These powers are all, individually and collectively, susceptible of improvement from exercise; therefore a knowledge of their nature and offices in the mental economy is of essential service in their use and application. It is incumbent to examine into, and to obtain clear conceptions of what these various original powers and faculties are, which are thus employed about ideas, either in their creation through the inward power of reflection, or in that power of recalling them before the mind's eye, and regulating their movements in the process of mental conviction. These are the instruments which the logician must wield whenever he makes a display of his art, either to satisfy his own mind, or to bring the force of truth to bear on the minds of others.

Next comes reason or intelligence, whose office is to direct the faculties in all their dealings with our ideas,—in guiding, directing, and moulding them to some given end or object, which is invariably a general idea or conception, and which lies in the bosom of the intelligent principle, so to speak, till circumstances develop or quicken it into life and activity. The reason, therefore, exercises an efficient and superintending power over the entire mental machinery. It is not itself a mere intellectual faculty or process: it is more. It embraces the whole man. It enters into every thing

in the shape of knowledge. Whether we deal with facts, experiments, or observations, we never get beyond the sphere of reason. As the author observes, "If general knowledge consists in a perception of the agreement or disagreement of our own ideas, and the knowledge of the existence of things without us be had only by our senses, what room is there for the exercise of any other faculty but inward sense and inward perception? What need is there for reason? Very much, both for the enlargement of our knowledge and regulating our assent; for it has to do both in knowledge and opinion, and is necessary and assisting to all our other intellectual faculties."

We can see from the general scope of Locke's *Essay*, that he aims at the laying down certain comprehensive rules for the discovery and promulgation of truth. He makes the distinct portion of his philosophy subservient to this end. He looked upon his own system in the same light as Bacon did his, as forming an entire and consolidated *organon* for the successful prosecution of all science and knowledge. But there was this great difference between these two distinguished logicians,—Locke engrafted his logic upon certain primary principles of mind, very dogmatically and pointedly enforced; whereas Bacon dealt simply with the sensible and material things around him, and only ventured to suggest admonitory cautions and maxims as to their arrangement, and the discovery of their causes. Locke's theory of human knowledge and logical truth, was therefore more fraught with the elements of dispute and misapprehension than Bacon's; and more likely to give rise, when reduced to any practical bearing, to

more diversified opinions as to its intrinsic nature and merits. And this is just what we find has been the case. The logical aim of Locke has been more severely and minutely criticized, and more generally misapprehended and misconstrued, than that of Bacon's. The theory of scientific evidence maintained by the latter, was preserved from oscillating beyond a given point by the material agencies within which it was encircled; but the system of Locke opened out at once a boundless range of discussion and speculation, calculated to affect questions of the most vital character.

A very cursory glance at the chief parts of the *Essay* of Locke, will teach us that his logical method is precisely the same as the inductive method which Bacon applied to the study of physical science. The philosophy of mind is a science of facts revealed to us by consciousness. This is Locke's fundamental position, and the basis of all his logical illustrations. His mental power of reflection is the instrument which corresponds to the artificial instruments and reproductive processes of the Baconian hypothesis.

We cannot close these remarks on Locke's logical views without a passing word on his little tract, *On the Conduct of the Understanding*. This has occasionally been incorporated as a distinct chapter in his *Essay*, for which it was originally intended by its author. It is a valuable fragment. Its general scope is, to impress upon the youthful mind in its pursuit of knowledge the moral and religious obligation attending every exercise of the judgment and understanding; and that every display of the logical art should be guided and influenced by a conscientious love of truth. This

small essay of seventy-five octavo pages has often been employed as a logical text-book in some of our English universities. Indeed, its utility, as an instrument of early philosophical education, is highly spoken of by Mr Hallam, whose learning, judgment, and candour, give at all times great weight to his opinions. He says, "Aristotle himself, and the whole of his dialectical school, had pointed out many of the sophisms against which we should guard our reasoning faculties; but these are chiefly such as others attempt to put upon us in dispute. There are more dangerous fallacies by which we cheat ourselves—prejudice, partiality, self-interest, vanity, inattention, and indifference to truth. Locke, who was as exempt from these as almost any man who had turned his mind to so many subjects where their influence is to be suspected, has dwelt on the moral discipline of the intellect in this treatise better, as I conceive, than any of his predecessors." Again, "I cannot think any parent or instructor justified in neglecting to put this little treatise in the hands of a boy about the time when the reasoning faculties become developed. It will give him a sober and serious, not flippant or self-conceited, independency of thinking; and while it teaches how to distrust ourselves, and to watch those prejudices which necessarily grow up from one cause or another, will inspire a reasonable confidence in what he has well considered, by taking off a little of that deference to authority, which is the more to be regretted in its excess, that, like its cousin-german party-spirit, it is frequently united to loyalty of heart and the generous enthusiasm of youth."*

* Lit. Middle Ages, vol. iii. p. 388

The monuments of Locke's influence over the logical mind of Europe, are to be seen in every direction. He founded a school of his own, and gathered around him a body of ardent and intelligent disciples, in whose labours we recognise the sagacity and truthfulness of their master. His method and his principles have taken a deep root in the minds of men; and though these, in some cases, have given rise to speculations at variance with the general spirit of his logical philosophy, yet, on the whole, his labours have proved highly serviceable in the extension of rational knowledge and scientific thought among the masses of mankind.

CHAPTER XIII.

THE PROGRESS OF LOGICAL SCIENCE IN GERMANY, FROM THE PUBLICATION OF LOCKE'S "ESSAY," TILL THE END OF THE EIGHTEENTH CENTURY.

THE writings of Bacon, Descartes, Leibnitz, and Locke, were not long in making their way into all the chief seminaries of learning in Europe. Although viewed in various lights in reference to logical science, yet they unitedly produced a great effect upon the established methods of developing its rules and principles for the purposes of general instruction. It was now attempted to place logic, both in its scientific and formal relations, upon a more comprehensive basis—to give it a popular and useful direction—and to supplant that lethargic system of the schools which had for so long a period retained possession of the public mind in every country of Europe.

In no part, however, of the continent was there a greater change effected by the writings in question than in Germany. We recognise the new doctrines of the philosophy of reasoning in almost every logical work of the eighteenth century. This change effected

the scientific more than the formal rules of logic. The profound thinkers of Germany turned their attention to the abstract principles of the ratiocinative art, with a view of discovering some short and certain route to all knowledge, which, they conceived, must certainly lie embosomed in some of the forms and principles of the intellect itself. With this design, they turned all their thoughts inwardly, scrutinized every movement of mind and feeling, and sought to reduce the entire phenomena of existence to some single principle or general law. And so intent were they on this mode of proceeding, and so full of hope that their fondest wishes would be realized, that they plunged at once into the most unfathomable speculations, and gave eager chase to the most attenuated and nebulous forms of thought, in order that they might have something to boast of in the way of originality, if a higher object could not be attained. Hence it is that the philosophical logicians of Germany stand so conspicuously apart from, and have so few points of intellectual contact with, their brethren in every other quarter of the world. The German *savans* philosophise to themselves, and for themselves. Their logical systems, viewed in their scientific relations, stand like colossal and unshapely buildings in the heart of a desert plain—monuments of intellectual labour, but totally unsuggestive of a single rational motive why they were ever conceived or constructed.

In spite, however, of their general arid and unsatisfactory character, there was a lofty spiritual aim in all the logical speculations of Germany. They had nothing in them directly low and grovelling. One of the

most prominent elements in this spiritualism was the theological, which oftentimes, it must be allowed, made its appearance under very questionable aspects, but still a distinct and individual element it was of great power and efficiency. The religious feelings of mankind were clearly and forcibly demonstrated to constitute one of the main pillars of truth in general; and the peculiar way in which this was often done, threw no small portion of light upon the fundamental doctrines of theology, considered as an embodiment of scientific truth. Notwithstanding, therefore, all the mystical vagaries of the German logicians—and they have been neither few in number, nor insignificant in influence—they have not treated theology with an open and disdainful contempt. They have generally acknowledged her authority and influence in the science of reasoning, although the manner they have often chosen to manifest their allegiance was calculated, in the eyes of sober thinkers, to militate against both.

The logical systems of Bacon and Locke did not exercise any thing like the same degree of influence over the German mind as those of Descartes and Leibnitz. The latter, in particular, reigned for a long period with almost undivided sway and authority in the province of philosophical logic.

We can hold out but slender hopes that what we shall advance on the logic of Germany, will in any degree prove intelligible to the general reader. To gain an insight into it, some knowledge of the metaphysics of the country is indispensably requisite; but, as we cannot enter upon so vast a subject, he must needs grope his way, as he best can, through what we have to

state on the matter. If he can make himself in some measure familiar with the German mode of prosecuting mental science, and of the phraseology currently employed, his case will not prove quite so hopeless and forlorn. But, under the most favourable circumstances, it will be prudent to keep his expectations of realizing any great stock of useful knowledge within somewhat narrow bounds.

Following Leibnitz, we have Tschirnhausen and Christian Thomasius: the father of the latter, Jacob Thomasius, author of *Logica* (Leipsic, 1695), had been the tutor of Leibnitz, and one of his most ardent admirers. Neither Tschirnhausen nor Thomasius entered, however, very fully into his logical philosophy, although they viewed it favourably, and, to some extent, founded their own individual views upon it. In his *Medicina Mentis* (1696), Tschirnhausen develops some principles of logic with clearness and great acuteness. Thomasius thought logic and history the two eyes of all human knowledge. The abstract principle on which he considered all reasoning rested was this,—that sensation furnished the rough materials of knowledge; but the reason, a faculty of a complex character, elaborated out of them all those fundamental principles relative to human nature which constitute what we term the science of man. It is a false view of truth to consider it as a thing relative to the intellect alone: it is the product of the sentiments and feelings of the soul, as well as of the mind, strictly so called. Hence all truths concerning human nature are under the direct influence and control of two distinct principles—*intelligence* and *will*. The entire body of scientific truth

relative to man—as a social, moral, religious, and thinking being—must always be viewed in reference to these two separate sources from which they flow. It is from not keeping this distinction before them, that logicians in all ages have, in the opinion of Thomasius, committed such egregious blunders in the construction of their systems.

The great logical instructor of Germany, after Leibnitz, was Wolff. He devoted a long and laborious life to illustrating the principles of the author of the *Pre-established Harmony*, and applying them to the science of logic, both philosophical and formal. Wolff stands, even in Germany, as a striking monument of indefatigable application and methodical skill.*

The *Philosophia Rationalis sive Logica* of Wolff has gone through many editions, and been moulded into innumerable digests and epitomes. The author defines logic to be that science which directs and guides our faculties to a knowledge of truth. He divides logic again into *innate* and *acquired*. All men reason without a knowledge of any formal rules ; but they reason more steadily and comprehensively from an acquaintance with logical maxims and precepts.

In the first part of his work he treats of the leading principles of logic—of notions, judgments, and reasoning. In the second part, he shews the method of distinguishing the true from the false ; how to discover truth ; the scheme of composing or arranging our ideas ; the most effective plans of communicating truth to

* “ M. Wolff a ramené les principes et les regles de la logique à la demonstration. Nous n'avons rien de plus exact sur cette science que la grande logique latine de ce philosophe.”—*Encycl. Français*.

others ; the best means of promoting general knowledge ; and, lastly, how to bring the entire mass of our acquired information to bear upon our conduct of life.

He makes constant appeals to the force and great value of geometrical reasonings ; and he conceived it was quite possible to introduce mathematical forms or symbols into argumentations on all subjects connected with human nature.

In his logical work, Wolff endeavours to combine and classify all the chief elements of Leibnitz's philosophy, so far as they could be brought to bear on logic as a distinct and separate branch of study. This circumstance has naturally circumscribed his reputation as an original thinker into very narrow limits. He makes the two great principles of the Leibnitzian theory—the *sufficient reason* and the *principle of contradiction*—play an important part in his logical speculations. They appeared to him to embrace doctrines of great utility in the art of general reasoning.

As a key to his entire views of logic, we may refer to his two leading points, *empirical reason* and *pure reason*. The former deals with the elements or products of sensation, the latter with necessary truths.

It was a favourite opinion of Wolff's, that all our reasonings could be greatly facilitated by having recourse to a uniform system of signs. He conceived that hieroglyphical emblems or figures might be so applied as to represent fully and forcibly all general notions and propositions.

The knowledge of Wolff's logic was not confined to Germany alone. Deschamps made it known in France ; and in Sweden, and other neighbouring countries, it

was expounded by able writers and professors. The Swedish logicians, Wallachius, Brunnmark, and Kyrger, differed with Wolff as to the application of the *sufficient reason* to logical views, although they bore testimony to the general soundness and importance of his system, taken as a whole. There were also some ardent admirers of the logic of Wolff in the Low Countries, in Poland, and in Italy.

The admirers and opponents of Wolff in his own country were numerous and respectable, both in point of talent and reputation. The logical portion of his writings was variously contemplated, as it happened to agree with, or militate against, some favourite metaphysical or theological theory. As the religious and mental philosophy of the country became more varied in its character and aim, and foreign elements of speculation became likewise more generally known and cultivated, there arose a greater diversity of opinion as to all logical systems and modes of tuition among the active and leading spirits of Germany. We find every where fragments of all sorts of theories, and often very capriciously and fantastically tacked together. We find some favourite theme of Locke dovetailed into another of Leibnitz, and an aphorism of Bacon paying homage to Descartes or Spinoza. Still, amid all this apparent variety and contradiction, logic preserved its German physiognomy and unity. It retained its transcendental type, and the grand distinction between empirical and pure reason was steadily kept in view.

Andrew Rudiger was the contemporary of Wolff, and opposed to many of his logical views. In his

Philosophia Synthetica (1707) and other works, he argues strenuously and forcibly for the great importance of logical science. He entertained an idea, that the chief source of all error was fairly traceable to the imperfect and one-sided treatises on the subject which commonly fell into the hands of young students. Being of a captious and fastidious turn, he was led to search for imperfections more among the forms than the principles of dialectics; and this induced him to make so many divisions and technical alterations in his logical works, that his readers were more perplexed than benefited by his labours. Yet his views were generally sound, and of a decided and enlightened eclectic character. Against the application of mathematical forms and reasonings to other branches of knowledge he raised his voice, and boldly maintained that such a course, if carried out to its legitimate results, would prove subversive of all sound and useful knowledge.

The learned Budeus was hostile to the leading speculations interspersed throughout the logic of Wolff, and particularly to his application of the doctrines of the *pre-established harmony*, and the *principle of contradiction*. In his work, *Bedenken über die Wolffianische Philosophie*, he charges Wolff with undermining the orthodoxy of his students, by the introduction into his scheme of public tuition of the elements of heresy and infidelity. Syrbius was a logician of independent mind, and seemed always under the active influence of a sincere love of truth, although he was a little wayward and mystical. He thought that a knowledge of the mental faculties was indispensable to every mode of conducting regular and systematic logical studies, but

that this knowledge should be as free from theoretical bias as possible.

Crusius thought the *principle of contradiction* not of so much importance in philosophical logic as Leibnitz and his followers conceived it to be. He confined its application solely to mathematics. He thought there was another principle of much more utility and influence in all our reasonings on matters connected with our internal constitution,—namely, *the impossibility of conceiving certain things otherwise than true*. There were two portions of this principle—*incompatibility* and *inseparability*; and these lay at the basis of many of our most important conclusions relative to moral and metaphysical truths. Gottsched was an admirer of the logical principles of Locke, who, he conceived, had done especial service to the general cause of truth and rational knowledge. He departed, nevertheless, from some of the leading maxims of the English philosopher—particularly by giving a conspicuous station to the *principle of contradiction* and *sufficient reason*. According to Gottsched, reasoning, in all its higher and more lofty manifestations, is a complex operation, calling into activity nearly every power or faculty of the intellect. Sensation, perception, attention, and abstraction, form inseparable ingredients in every judgment or conclusion of the understanding.

Daries, professor of logic at Jena, in his *Via ad Veritatem* (1740) entered profoundly into the principles of logical philosophy. His lectures created a lively interest throughout many parts of Germany. He was an admirer of Wolff to some extent; and for Descartes and Leibnitz he entertained an enthusiastic

veneration. Locke and Bacon were likewise familiar to him. In his logical labours he paid great attention to the rules of definition. He remarks, in reference to the introduction of new terms into speculative subjects, that, in the progress of language, words become often less expressive and significant, and seldom convey at once a clear view of a subject, and a logically connected abstract of it. Hence arise so often an apparent necessity for creating a new scientific terminology. But on all sciences founded on human nature, this expedient only removes the immediate and more pressing impediments, without solving the real difficulty. Indeed, novel words and phrases introduce new difficulties. Their coinage may be unlucky; their acceptance is always tardy; their powers of verbal combination are very limited; and the necessity of learning a new language, in order to understand some new view of an old science, renders to most persons that science unpalatable.

Darwin likewise treats of induction, and of the mode the mind follows in arriving at truths from this source. He discusses the nature of philosophical theories, and endeavours to account for them in this manner:—In the investigation of any subject, however limited, where a train of reasoning is required, the mind instinctively or intuitively forms to itself some theory or general conception under which the facts or things under consideration are to be arranged; and then, in the second place, it does not rest satisfied with this, but is invariably inquisitive relative to the *final cause* of every event or occurrence. The intellect in all reasoning is thus influenced by two separate powers, which, when exten-

sively cultivated and developed, are the impelling motives to that spirit of theorizing so visibly imprinted on the mental history of mankind, and which is the prolific source of all scientific arrangement and investigation. Man, in his search after truth, deals therefore at the outset with *a priori* principles or conceptions, and reasons downwards to particular things. Were this not the case, science, properly so called, would, according to Daries, be impossible.

Schletewein of Jena, and Hollmann of Gottingen, both attempted to popularize the study of logic, by freeing it from unnecessary and cumbrous terms and divisions. Augustus F. Muller made the science a somewhat material and formal thing, founding it upon pure sensation, or the products of the senses. The logic of Reimarus, published at Hamburg and Kiel in 1756, became very popular throughout Germany. It is characterised by clearness of statement, and its moral and religious tendency.

Reusch was a logician whose views were chiefly taken from Leibnitz and Locke. The faculties of sensation and reflection of the latter, were mingled with the principle of contradiction and the sufficient reason of the former. His *Systema Logicum* (1741), obtained considerable reputation for many years after its first publication. Walch resolves all logical science into experience. Every thing must result from observation. No truth can stand apart from it. Sensation and sentiment are the foundations of all human reasonings.

Ploucquet, in his *Methodus Calculandi in Logicis* (1764), and other works, laboured hard to introduce

new elements into the science of logic. His great aim was to reduce all human knowledge to one or two simple principles or rules, and to establish upon these a logical method which would, mechanically as it were, convey knowledge on every branch of science with infallible certainty and great expedition. Reasoning was to be reduced to its simple elements, and, by means of algebraical signs, rendered a matter of pure calculation. Logic was only, according to Ploucquet, the art of deducing by an immutable rule the known from the unknown, and this is amply sufficient for the explanation of every department of human inquiry. He reduces all judgments on facts or experience to identical propositions, by the aid of the principle of *sufficient reason*.*

John Henry Lambert was a philosophical logician of distinguished eminence. He was a native of Alsace, and published his *Novum Organum* in 1763. The logical principles he advances are chiefly taken from Leibnitz, Wolff, Locke, and Bacon. He was of opinion that mathematical reasoning was susceptible of application to every subject of human knowledge. It was this notion which induced him to lay so much stress upon verbal and technical terms and classifications.

In several of the logical works we have just enumerated, and in others we have not particularly specified, there is an element of speculation which is entitled to a passing notice. Some logicians talk of reason, and the reasoning faculty, as a *power* rather than an *intelligence*; as something which produces an effect without having any appreciable consciousness of its doing so.

* Method., §§ 10, 18, 104.

The peculiar nature of German philosophy leads the minds of its cultivators to this mode of thinking and writing. The constant dwelling on the subjective element, and considering it in all its totality, induce the mind to impart a sort of materiality to it, and to assimilate its workings to those of objective agencies or powers. But truth is, in all its phases, necessarily allied to intelligence; and this intelligence is itself under the influence of the active and voluntary powers of the individual. Reasoning is not, therefore, a general and blind energy or impulse, directed to a particular end, and guided by nothing higher nor extrinsic to itself. Under no conceivable circumstances can we form a notion of truth as belonging to any thing or quality whatever, as being purely the result of any such impersonal and fortuitous energy or power.

The general scope of the logical speculations of which we have attempted to give a mere sketch, gradually prepared the way for the introduction of Kant's system—a system which has imparted to the logical philosophy of Germany a peculiar and interesting character. His views on logic, strictly so termed, are, however, so intimately connected with his entire theory of metaphysical science, that it is next to impossible to discuss his hypothesis of reasoning without offering some short notice of his speculations on mental science.

Kant asked himself the question, Is human knowledge composed solely of elements furnished by experience? He answered this in the negative. He maintained that we have certain notions altogether independent of sensation, and which are the product of the understanding itself. And, in the first place,

he noticed the mathematical sciences, which are grounded on notions of this stamp. He maintained that the judgment we form, that the radii of a circle are all equal to one another, is not the fruit of experience, but is something permanent, necessary, and universal; whereas experience deals with nothing but particular facts. There are therefore cognitions of an *a priori* cast, entirely distinct from any sensible element. Kant extended his inquiries into our other notions relative to the constitution of human nature, and he likewise formed judgments here of the same *a priori* character, and subject in their application to the same conditions and limits which mark all truths of a mathematical kind.

There are thus, therefore, two sorts of judgments. In the one the attribute or predicate is contained in the subject, as, for example, *an infinitely perfect being is good*. This judgment does nothing, however, but develop a notion, without adding to it any other notion, and in this point of view does not enlarge the circle of our knowledge. Such judgments Kant termed *analytical* judgments. The second kind of judgments are those in which the attribute is not contained in the subject, as, *every phenomenon has a principle or cause*. This principle or cause is not contained in the simple notion of phenomenon. Judgments of description increase our knowledge, inasmuch as they consist in an affirmation or statement of something not comprised in the bare conception of the subject. This second class of judgments Kant terms *synthetic* ones.

Having now obtained two species of judgments, the analytical and synthetical, it became necessary to shew how they mutually co-operated to produce that which

we call human knowledge. This is the problem he undertook, in his metaphysical system, to solve. His speculations to this end are divided into three principal branches ; *the criticism of theoretical reason ; the criticism of pure reason ; and the criticism of another mode of reason, whose office or nature is to establish the harmony or alliance of the theoretical and practical reason.*

Leaving the reader, now, to other sources of information on these abstruse points, we come to state the categories of Kant, which form the groundwork of all his logical speculations. These he reduces to *four* ; and he affirms they contain all the several judgments which the human mind can form—

First—QUANTITY, which embraces,	{ Unity. Plurality. Universality.
Second—QUALITY, which embraces,	{ Reality. Negation. Limitation.
Third—RELATION, which embraces,	{ Substance and Accident. Causality and Dependence. Action and Reaction.
Fourth—MODALITY, which embraces,	{ Possibility, Impossibility. Existence, Non-existence. Necessity, Contingency.

These categories are not the result of experience ; they are solely the universal and necessary laws of the understanding. All our notions fall within them, and they are the forms of the intellect, as time and space are the forms of our sensibility.

The particular treatise which goes under the deno-

mination of *Logic*, was a posthumous work of Kant's. It is necessary we should see what notions he entertains of the nature and province of logic. He affirms that we can neither think, nor make use of our understandings, otherwise than in accordance with certain rules. All these rules are either necessary or contingent. The former embrace those without which no use of the understanding would be possible; the latter, those without which a certain determinate use of it would not take place. When we reflect inwardly, we discover those rules of the understanding which are absolutely necessary in every respect, and without regard to any specific objects of thinking, because, without them, we could not think at all. Hence we have an *a priori* knowledge of them; because they comprise, without any reference to external objects, merely the condition of the use of the understanding generally, whether relative to matters of *pure reason* or of *experience*. Hence it is that all necessary and universal rules of thinking must relate to the *form* of the mind, and not to the *matter*. Logic is, therefore, the science of the necessary laws of the understanding and of the reason, or the mere *form of thinking* generally. Logic is to be considered as the foundation of all other sciences, but it is not an *organon* of the sciences. An organon presupposes an exact knowledge of the sciences—of their objects and their sources. The mathematics, for instance, is a science which comprises the ground of extending our knowledge in certain other directions, and on this account may fitly enough be termed an organon. But logic is but the use of the rules of the understanding, and cannot go into the sciences, and

anticipate their matter. It is not for enlarging, but solely for judging and regulating our knowledge. It is simply a *canon* of the understanding and the reason, and must not borrow principles, either from science or experience; it must comprehend nothing save its *a priori* laws, which necessarily appertain to the understanding itself.

Those logicians, therefore, who amalgamate psychological principles with logic, act erroneously. This mode of inquiry leads but to a knowledge of contingent laws; whereas in logic the inquiry is not after contingent, but necessary rules—how we think, but not how we are to think. It is to teach us the right use of the understanding, as the use is in perfect agreement or harmony with itself.

Logic is a demonstrative science, for it is occupied with the empirical use of the understanding and of reason; and about the universal and necessary laws of thought, which depend upon *a priori* principles, and from which all its rules can be derived, and proved to be those to which all cognitions of the reason must be conformable.

Universal logic is to be distinguished from transcendental logic. The latter represents an object as the naked product of the understanding; whereas universal logic extends to all objects in general.

Logic is divided by Kant into the *analytic* and the *dialectic*. The analytic discovers all the operations of reason which we perform in the act of thinking in general. It is the analysis of the forms of the understanding and of reason, and justly styled the logic of truth. The dialectic is the logic of appearances, and arises

from the abuse of the analytic, and was the foundation in former times of the mere art of formal disputation. The ordinary division of logic into popular and scientific, Kant considers unjustifiable. Natural logic is not logic, but simply an anthropological science, which deals with the natural use of the understanding, and which has only empirical principles to rest upon. Scientific logic, comprising the universal rules of thinking, is that alone which deserves the name of logic.

The division of logic into theoretical and practical is likewise wrong. Universal logic, considered as a canon of the understanding, and abstracted from all objects, is not susceptible of any practical application. The same objections lie against the common division of pure, and applied or mixed logic. The latter is not entitled to be called logic at all. It is mere psychology, whose object is to consider how our thinking is usually carried on, not how it must go on. Neither, according to Kant, can the division of logic into common and speculative be sustained. He likewise says that *common sense* can be no foundation of logical science; because this sense is the faculty of knowing the rules of thinking in the concrete, whereas logic must be a science which embraces the rules of thinking in the abstract.

Kant enters upon the discussion as to the nature of truth. The question, What is truth? relates, he says, to two distinct things,—to that which is *without* us, and to that which is *within* us; or, technically, to objective and subjective materials. With respect to the first, the *objective* materials, they can furnish us with

no criterion of truth ; but the *subjective* materials can furnish such a criterion. A universal criterion of truth from objects around is not possible ; because it would be impossible to embrace all the modes in which objects differ from one another, even if we could know all the objects themselves. But a subjective criterion is possible, because truth from this source consists entirely in the agreement of the act of thinking with itself. The universal criteria of formal truth are consequently nothing but universal logical marks of the agreement of cognition with itself, or with the invariable laws of the understanding and of the reason.

All formal universal criteria, though they cannot constitute objective truth, are to be considered as its *conditio sine qua non*.

The formal criteria of logical truth are,—1st, The proposition of contradiction ; and, 2d, That of sufficient reason. The first determines the logical possibility of a cognition, and the latter the logical reality.

There are three principles connected with the criteria of formal truth,—1st, The principle of contradiction and of identity, which determines for problematical judgments the internal possibility of a cognition ; 2nd, The principle of sufficient reason, on which the logical reality of an act of thinking depends, as forming matter for assertive judgments ; and, 3d, The principle of the exclusive third (*principium exclusi medii inter dua contradictoria*), in which the logical necessity of a cognition is founded.

The distinction between theoretical and practical cognition or thinking is this :—Practical cognitions are,—1st, Imperatives, and opposed to theoretical cogni-

tions ; and, 2nd, The grounds to possible imperatives ; and, in this point of view, opposed to all speculative thinking. Every imperative proposition expresses or implies a possible freedom of action by which a certain end is to be realized. Theoretical cognitions are such as express, not what must be, or ought to be, but what really is ; consequently they refer not to *acting*, but to *being* or *existence*. It is the nature of the practical, however, to absorb all the theoretical ; for the absolute value of all thinking is to be estimated from its practical results. And it must be borne in mind here, that the *practical reason*, as unfolded in Kant's entire system of philosophy, contains four doctrines — the liberty of the will, the obligation to virtue, our existence in a future state, and our responsibility to a supreme Creator or Governor of the universe.

These general principles, and others of a like philosophical character — respecting the nature of belief, probable and mathematic evidence, cause and effect, &c. &c.—are given as an introduction to the study of logic proper, which consists of two parts. The first contains the *General Doctrine of Elements* ; and the second, the *General Doctrine of Method*.

The first item in the elements of logic are *conceptions*. All cognitions or thoughts are either intuitions or conceptions. An intuition is a single, and a conception a universal representation. The cognition, or knowledge of conceptions, is termed thinking or cogitation.

Matter and form belong to every conception. The object constitutes the matter of the conception, the universality its form.

The origin of all logical conceptions may be traced

to three sources,—1st, Comparison, or the comparing of representations with one another relative to the unity of consciousness; 2nd, Reflection, or reflecting how the several representations may be comprehended in one individual act of the consciousness; 3d, Abstraction, or the separation of all that by which any given number of representations are distinguished from one another.

The sphere of our conceptions is in a direct ratio with the number of things which come under our consideration and reflection.

The universal rules relative to the subordination of our conceptions are,—1st, Whatever agrees with, or is repugnant to, the superior conceptions, likewise agrees with, or is repugnant to, all the inferior ones which are contained under them; and 2nd, Conversely, whatever agrees with, or is repugnant to, all inferior conceptions, likewise agrees with, or is repugnant to, their superior ones.

A *judgment*, according to Kant, is the representation of the unity of the consciousness of various representations, or the representation of their relation, provided they make up a conception. Matter and form belong to every judgment as its constituent elements. Logic cannot occupy itself with the *matter*, but only with the *form* of conceptions. All the logical forms of judgments are comprehended under the four categories—Quantity, Quality, Relation, and Modality.

The *syllogism* is treated of in the third section of the first part; and Kant's discussion of the subject does not differ in any material point from our common treatises on syllogistic rules. Syllogising, he tells us,

is that function of thinking by which one judgment is derived from another.

In the second part of Kant's logic, which treats of *Method*, he observes that all thinking or knowledge, considered as a whole, must be conformable to some general rules. These rules relate either to *manner*, which is free, or to *method*, which is co-active.

All thinking, in its scientific relations, must be arranged according to some method. All science requires a systematical cognition, regulated by digested rules. Logical method has to treat of the form of a science, or of the way of proceeding, in order to connect the varied cognitions of any particular department of knowledge. All methods should be characterised by distinctness, profundity, systematical order, and comprehensiveness.

Method is divided by Kant into several kinds, as the following—the scientific or popular method; the systematical or fragmentary method; the analytic or synthetic method; the syllogistic or tabellary method; the acroamatic or erotematic method; and meditation, by which is understood, reflection or methodical thinking.

The general doctrines implied and set forth, both in Kant's philosophical and formal logic, may be summed up as follows.

What we denominate human knowledge, taken in its widest extent, is composed of two elements; the experimental, or *a posteriori* element, and the pure reason element, or that derived from an *a priori* source. If the intelligence or reason did not apply its forms to the intuitions furnished from sensation, these intuitions

could never become cognitions, or objects of thinking. They would be lifeless and abortive. On the other hand, these forms of the understanding would be without any significancy were they to stand alone, without the intuitions which the senses furnish. To constitute real knowledge, there must be here an action and reaction of one element on the other.

All the notions of the pure reason are destitute of objective reality, and this arises from the reason not acting upon the intuitions of sense, but only on the forms of the judgments which the intellect produces.

In attributing to these notions of the pure reason an objective reality, we act erroneously, because we are straining to comprehend existences which are beyond the sphere of the sensible world. The limits of our knowledge are the limits of our experience.

We likewise act erroneously when, instead of employing the notions furnished by the pure reason in arranging and systematizing our judgments, we apply them immediately to the results of experience. This mode of inquiry gives rise to the antinomies, which are a series of judgments terminating in contradictory or inconceivable results. These antinomies are placed as sentinels, as it were, to apprise the philosophic inquirer that all such modes of proceeding as give rise to them are decidedly erroneous and vicious.

What we term the laws of nature are nothing but the laws of our own intelligence. We impose the laws of our mind upon nature. The order which we attribute to the operations of nature, are at bottom only the order of our intellectual perceptions, determined by the fundamental forms of the understanding.

The logical principles of Kant, which more immediately sprang out of his *Critic of Pure Reason*, created a lively sensation, not only throughout the author's own country, but, to some extent, in other European states. It roused the spirit of inquiry, and was the prolific parent of that huge mass of German speculation, which has astonished and perplexed the philosophic minds of men wherever it has been heard of and studied.

Reinhold, in his *Versuch einer Kritik der Logik*, founded logical science on the *representative faculty*, which is a modification of the *pure reason* of Kant. There are six rules in reference to philosophical logic which it is of great importance to keep in view,—1st, All elementary truths should be *immediately* perceived; 2d, Every fundamental truth should have an existence of all knowledge from experience; 3d, This fundamental truth should be simply the expression of a fact; 4th, It ought to be recognised by all men; 5th, It must be entirely separated from sensation; and, 6th, It ought, however, to appertain, in a certain logical manner, to all experience and to all our thoughts.

Abicht, in his *Verbesserte Logik oder Wahrheits-Wissenschaft* (1795), defines logic to be simply the *perception of truth*. Three questions are embodied in all reasoning,—1st, What is the surest and most direct road to knowledge? 2nd, What is the criterion of truth? and, 3d, What is the best mode of communicating truth and science to others? Salomon Maimon attacked the categories of Kant in his *Die Kategorien des Aristoteles* (1794), on the general ground that no objective reality could be inferred from them. Jacob Sigismund Beck published his *Lehrbuch der Logik* in

1796, which contains some remarks on the logical principles involved in the *Pure Reason* of Kant.

Plattner was a distinguished logician who followed in the wake of Kant. He took an enlightened and comprehensive view of logical truth. And the same remark is applicable, to a certain extent, to the logical speculations of Eberhard, Tetens, Schaumann, and Maass.

In the Transactions of the Berlin Academy, established in 1700, and which enjoyed for many years an European reputation in matters of speculative science, many interesting papers on logical topics will be found—chiefly from the pens of Formey, Begnelin, Beausobre, Merian, Maupertuis, Boyer, and Ancillon.

CHAPTER XIV.

PROGRESS OF LOGICAL SCIENCE IN FRANCE, FROM THE PUBLICATION OF LOCKE'S "ESSAY" TILL THE END OF THE EIGHTEENTH CENTURY.

THE historical aspect of logic in France, in its scientific relations, from the time of Locke till the termination of the last century, is altogether of a different cast from that which we have just noticed in Germany. The philosophic mind of France had little constitutional relish for abstruse systems. It preferred something palpable, clear, definite, and material. Bacon, Locke, and Gassendi, had more charms for the French logicians than Descartes, Leibnitz, and Kant. Hence it is that, speaking generally, the current of logical philosophy chiefly ran, during the period of which we are now speaking, in the channel which the three first-named philosophers opened out for the prosecution and development of scientific truth. Here and there we recognise the logical influence of Descartes and Leibnitz; but it has only been within the last half century that the French have manifested a lively interest in these two distinguished men.

The logical works of the French writers, in this

century, are characterised by a vehement desire for analysis and simplification. They labour to reduce the entire reasoning powers to a single element, and to account for the whole mental economy by the operation of an individual principle. This principle was, with them, the result of some outward influence from external bodies on our senses; and reasoning, in all its forms and aspects, was but the necessary or mechanical product of this sensational power. The laws of nature were invoked, attention was riveted upon them, and all the rational operations and sentiments of the inward man deduced from them. The French logicians refused to look into the intellect itself—to recognise any subjective element beyond the authority of sensation—or, if the great facts of mental consciousness were occasionally noticed or appealed to, it was only for the purpose of being indiscriminately buried in the mass of external perceptions and material agencies. This mode of analysing logical science necessarily led to a one-sided view of man and of human knowledge generally—increasing the objective at the expense of the subjective element, and thereby destroying the proper balance between them. The majority of French logicians never saw that the fundamental principles of thought were altogether different from the phenomena which seemed to suggest them. They looked upon them as pure abstractions—things set apart merely from the phenomena, but in no sense superior to them, or having any higher office to perform in the logical economy of the understanding.

The early and enthusiastic reception in France of the logical philosophy of Locke, tended greatly to produce

this mode of treating logic. Not forming a fair estimate of the general scope and design of the English philosopher's system, the French thinkers unfortunately stumbled on what was purely physical and mechanical in his plan, and obstinately shut their eyes against the intellectual and spiritual portion of his admirable treatise. They aimed at reforming and improving Locke, while they only mutilated and disfigured him. Their constitutional appetency for what was clear and pointed, naturally induced them to shrink from the very appearance of every thing bordering on profound reflection or abstract refinement; and commentaries and abridgements of Locke, sound and clever as far as they went, getting once hold of the public mind, there could be no effective check given to the spread of misconception and error. Consequently, we meet with repetitions of his logical notions in every direction, without the slightest reference to any statements or explanations calculated to qualify and correct their import and tendency.

There was a bold and uncompromising *nominalism* displayed in the entire logical literature of France within this period. Words, and words alone, were the things which constituted the elements of argumentation. We find it stated again and again, that it is the sole province of logic to regulate language. Thinking is only known to us through the medium of speech; and consequently, every idea in a proposition must have some internal or external sign to represent it. There is a necessary relation between the sign and the thing signified. The professed object of logic being to make us acquainted with what is going on in our minds, it is

clear, say the French logicians, that any change made in the symbols we adopt to express our ideas, must completely alter the nature of any propositions we lay before the understanding of others for their comprehension or guidance. Unless the different parts of speech are accurately arranged with regard to each other, no sound logical conclusion can be arrived at.

This verbal hypothesis, though in strict keeping with the general spirit of French philosophy in the eighteenth century, threw logical speculations comparatively into the background. They became little heeded and cultivated. Man was considered only as a being possessed of a superior *instinctive* power, not differing in essence from other portions of the animal creation. This notion lay at the root of a great proportion of the logical systems and speculations current among the French literati. Of course, this mode of considering logic naturally led to narrow and degraded views of human nature. It was likewise dogmatic and imperious in its tone and spirit. Every thing which savoured of spirituality was scouted as ridiculous and fanatical, and the result of an imbecile or misguided understanding.

The *Logic* of M. Crousaz, professor of philosophy in the university of Lausanne, was for many years a popular work on the continent, and particularly in France. It is contained in three thick and closely printed volumes. He divides logic into two great parts—*natural* and *artificial*. The first leads him to treat of all the powers and faculties of the mind; and the latter to the nature of language, the syllogism, &c. The treatise closes with a dissertation on *method*, which, he maintains, to

be useful in logical matters, must always be *full, brief, and certain*.

The logic of Crousaz is decidedly founded upon Locke's views of the nature of mind generally, and the faculty of reasoning in particular. Gibbon, in his published correspondence, bears testimony to the value of Crousaz's labours. "The logic of Crousaz," says he, "had prepared me to engage with his master Locke and his antagonist Bayle,—of whom the former may be used as a bridle, and the latter applied as a spur to the curiosity of a young philosopher." "But what I esteemed most of all: from the perusal and meditation of De Crousaz's logic, I not only understood the principles of that science, but formed my mind to a habit of thinking and reasoning I had no idea of."

Dumarsais's *Logique* is grounded on the Port-Royal system. It attempts to shew that the more our ideas are multiplied, and the more correct notions we have of the nature and operation of our minds, the more likely are we to reason, on other branches of knowledge, with clearness and profundity. The author conceives that the power of mental abstraction is one of the chief habits which logicians should strive to cultivate to its highest state of perfection, inasmuch as it is the foundation of all those conceptions we form of general truths and propositions. Dumarsais falls in with the common current of French thought in reference to the influence of language in reasoning, and ascribes to the proper adaptation of words, both in speech and writing, the most important logical results. He adopts the maxim of Leibnitz on this point, *that language is the mirror of the understanding*.

The Abbé Terrason, in his work *La Philosophie de l'Esprit*, maintains that logic is not a branch of knowledge from which philosophy derives its essential rules and maxims of investigation; on the contrary, it is an emanation from philosophy itself, which sheds its influence and power over the understanding generally, thereby guiding the judgment to a full comprehension of all the truths of science and art.

Father Buffier, a French Jesuit, is the author of a work on logic which has obtained considerable celebrity as well in his own country as in foreign seats of learning. In order, however, to comprehend accurately the general scope of this work, it is necessary we should peruse some of his philosophical dissertations, particularly those under the heads of *First Truths* and *Metaphysics*. His Logic is substantially a formal exposition of the principles entertained in these two essays. The end or object of logic is, the author says, to form just conceptions, and to reason well. For these ends, there must be rules for the government of the mind. Buffier here follows the scholastic plan, by determining the rules to be three—apprehension, judgment, and reasoning; and though he admits the importance of other rules, such as relate to comparison, doubt, method, and the like, yet he resolves all these into the three primary ones laid down at the commencement of his work.

The Logic is divided into two parts,—the first is in the form of letters, and the second under the arrangement of distinct *articles*, to the number of twenty-six. The syllogism is treated of in the first division, and the nature and origin of our ideas in the second.

Buffier says that logic is nothing but a mass of rules

for the ready direction of the mind in its several operations. This is the total of all logical discussion. The *end* of logic is, whatever the intelligent mind purposes to accomplish.

Whether logic be a *science* or an *art*, Father Buffier says, depends entirely upon the meaning attached to the two words science and art. If we call all true knowledge acquired by certain modes of reflection, or by rules, science, *then logic is a science*. Whether logic be an *art*, depends solely on the conceptions men have of the term, as relating to material or spiritual matters.

The name of Father Buffier is intimately associated with the history of philosophical logic in France during this century. His peculiar views on the subject connect him with the *common-sense* school of logicians, which will be more particularly dwelt upon in a subsequent part of this volume. Suffice it to state, in passing, that Buffier's work *On First Truths* aimed at shewing, that not only the ancient but even modern philosophers, have involved the nature and offices of the reasoning faculty in such abstruseness and difficulty, as to demand far too large a share of reflection to be comprehended by men of ordinary capacity and learning. To simplify the matter, he endeavours "to know truths in their very source—to analyse those to which we must ascend, in order to ascertain whatever is necessary to be proved, and which constitute the utmost boundary of human inquiry—to deduce principles capable of dispelling the mist of vulgar prejudice, the perplexity of the schools, and the prepossessions even of certain learned and modish philosophers."

In order to accomplish this desirable purpose, it was

necessary to refer to the primary truths of common sense in all our logical investigations, of which the following is the author's definition: "Common sense is that quality or disposition which nature has placed in all men, or evidently in the far greater number of them, in order to enable them all, when they have arrived at the age and use of reason, to form a common and uniform judgment with respect to objects different from the internal sentiment of their own perception, and which judgment is not the consequence of any anterior principle." Buffier says again, "The original source and first principle of every truth which we are capable of comprehending, is the interior sense we each of us have of our own existence, and which we feel within ourselves. This is, I say, the foundation of every other truth, and the basis of all human knowledge. Nothing else can give us a more home conviction, that the object of our thought is as truly existent as our thought itself; for the object, the thought, and the inward sense we have of them, are really nothing else but ourselves, who think, exist, and have an interior sense of those things."

The perceptions of common sense are grounded on the following principles:—

1. There are other beings and other men in the world besides ourselves.

2. There is in them something that is called truth, wisdom, prudence; and this something is not merely arbitrary.

3. There is something in ourselves which we call intelligence or mind, and something which is not that intelligence or mind, and which is named *body*; so that each possesses properties different from the other.

4. What is generally said and thought by men, in all ages and countries of the world, is true.

5. All men have not combined to deceive me.

6. What is not intelligence or mind cannot produce all the effects of intelligence or mind ; neither can a fortuitous jumble of particles of matter form a work of such order, and such regular motion, as a watch.

Buffier defines, as *first truths*, all propositions so clear and obvious that they can neither be proved nor refuted by other propositions.

Father Regnault, another Jesuit, followed the footsteps of Buffier, in an attempt to trace the first principles of reasoning to their proper source. Regnault's work, *La Logique en forme d'entretiens, ou l'Art de trouver la Vérité*" (1742), is written in the form of dialogue between master and pupil, and thrown into the most popular form for easy comprehension. It enjoyed considerable reputation in France generally ; and, among the order of ecclesiastics to whom the author belonged, it was for many years considered a valuable and indispensable manual of the science.

Diderot, in many parts of his philosophical writings, reduces reasoning to a mere species of sensation. He says, "Every idea must necessarily, when brought to its state of ultimate decomposition, resolve itself into a *sensible* representation or picture ; and since every thing *in* our understanding has been introduced there by the channel of sensation, whatever proceeds *out* of the understanding is either chimerical, or must be able, in returning by the same road, to re-attach itself to its sensible archetype. Hence an important rule in philosophy—that every expression which cannot find an

external and a sensible object to which it can thus establish its affinity, is destitute of signification.”* Helvetius affirms, likewise, that all truths may be reduced to simple facts, or identical propositions; $A = B$. The reasoning process is nothing more, he says, than the development of this simple law of our intellectual existence.†

In D'Alembert's *Histoire de Philosophie* (1760), the reader will find, in the fifth essay of the fourth volume, a dissertation on logic. It is brief, only extending to eight pages. But, small as it is, it contains many remarks of great value and profundity. The purport of it is, that geometry is the only department of human study where vigorous demonstration can be obtained; that all attempts to introduce mathematical forms of reasoning into subjects of human nature or theology are absurd; and that a rational conjecture is a legitimate and useful instrument in every general system of logic, although it is too commonly passed over by logicians as a matter of little moment.

The logical doctrines of the *Encyclopédie* (1745), a work which exercised a powerful and striking influence over the philosophical opinions of Europe for many years, are contained in the articles “Logique” and “Syllogism.” Logic is defined to be the art of thinking justly, and of exercising our mental faculties in the best manner in the investigation and promulgation of truth.

In the article “Logique,” the question is raised, whether formal or artificial logic is in any degree useful for the prosecution and attainment of general

* Œuvrès, tom. vi.

† Œuvres, tom. iii. p. 218.

knowledge and science; and it is answered in the negative; and the reasons given for this opinion are mostly a repetition of those found in Locke's *Essay on the Human Understanding*.

In the article "Syllogism" it is affirmed, that the notion that the syllogistic theory was, in a great degree, useful to the cause of truth or real science, was one of the great heresies of the scholastic ages.

The logical speculations and writings of Condillac made a deep and lasting impression on the scientific mind of France. He took Locke's *Essay* for his guide. The logical portion of his voluminous works are contained under the general head of *Cours d'Etude*. Here we have the development of his logic under three different aspects—the *Art of Reasoning*, the *Art of Thinking*, and *Logic*. The illustrations of the *Art of Reasoning* are mostly taken from the mathematics and the physical sciences. The author here asserts that there are three grand sources of evidence on which all reasoning is based—the evidence of fact, the evidence of sentiment, and the evidence of reason.

In the *Art of Thinking*, Condillac gives an account of the origin of our ideas of truth. As a fundamental principle, he lays it down that sensations constitute the origin of all our knowledge. He likewise treats of the use of signs, of analysis, synthesis, method, &c., on all of which topics there is much useful and interesting information.

In Condillac's *Logic*, he conceives that all reasoning may be ultimately resolved into the same form and certainty as mathematical evidence. The mode of accomplishing this, would be to effect such improve-

ments in language as to make it represent certain fixed and determined ideas. In this portion of his speculations he endeavours to mould the logical views of Bacon, Locke, and Descartes, into one harmonious and consistent code of logic, both scientific and practical. Still, however, the entire framework of reasoning is never raised beyond the standard of sensational knowledge. "Judgment," says he, "reflection, the passions, in short, all the faculties of the soul, are nothing but sensations which transform themselves differently." Again, "When there is an act of double attention, comparison is the result; to attend to two ideas, is to compare them; the operations are identical. We cannot, however, do this, without recognising either a resemblance or difference between them; this recognition is *to judge*. The operations of comparing and judging are only *attention*; and it is in this manner that sensation becomes successively, attention, comparison, and judgment."

On the character of the *Logique* of Condillac, the author of his life and writings, in the last edition of the *Encyclopædia Britannica*, gives us the following opinion:—"The object of this work is to give a condensed account of the principles of *analysis*, taken in the acceptation already mentioned. This process, he observes, is taught by nature, and is always conducted with accuracy when man is in quest of the means of supplying the urgent necessities of his being. It is when curiosity forms to him a separate order of objects for his gratification, that we become precipitate in grasping at conclusions, and embracing them with readiness, though not the produce of that rigorous

exactness of method which necessarily imposes on his earlier pursuits. In giving an account of the origin of ideas and the mental faculties, he exemplifies his views of analysis, and at the same time prepares the way for further applications of the mental powers of his pupils. He adheres to his doctrine of the supreme and exclusive influence of language in conducting all intellectual pursuits. Generalization and classification are, with him, nothing more than the contrivance of generic terms. The art of reasoning is made to consist in the formation of an appropriate language for the different sciences. He considers the justness of our reasonings as depending on the degree of perfection of the languages which we possess. The superior certainty of mathematical as compared with other knowledge, is ascribed by him to the superior certainty of mathematical language. Hence his favourite illustrations of the progress of the mind are taken from arithmetic and algebra. This principle is certainly carried by him to great excess in the framing of his general positions; yet we find him on other occasions recommending to his readers to cultivate the unbiassed study of nature, and to choose their words rather from the correctness of their application to objects as they have fallen under actual observation, than from having their meaning fixed by the unsatisfactory formality of verbal definitions. He lays down some highly useful rules for the prosecution of knowledge. His errors arise chiefly from a strained effort to give to his subject a degree of simplicity not adapted to its nature. Hence some of his maxims are more quaint than just; but compared with the complicated systems of logic previously

in use, that of our author formed an improvement which merited the grateful reception that was given to it; and even at the present day, if we pardon the paradoxical generalities by which it is disfigured, we may profitably trace, in company with the author, the steps by which many intellectual attainments are made, and the means by which the process admits of being facilitated.”*

Destutt-Tracy, in the third volume of his *Elémens d'Idéologie*, treats of logic. He considers it under two aspects—scientific and technical. He follows the leading principles of Condillac on the subject. He declares Locke's *Essay* to be the best logical treatise that ever appeared.

Destutt-Tracy affirms that all our perceptions and ideas are *real* to us, and must be the sole foundation of all our reasonings. The larger treatise in his *Logic* is divided into nine chapters, but they contain no account of the syllogism whatever. There is prefixed to the end of the volume another small work taken from Hobbes, for the special use of students, entitled, *Principes Logiques*. In this the author alludes to the syllogism, and observes that it is not expressive of the entire act of reasoning.

The theory of all truth and reasoning lies in a small compass—in the sensibility of our frame. We recognise four modifications of this sensibility:—1. Those impressions which arise from the *present* action of external objects on the senses. 2. Those which result from *past* action. 3. Those which give rise to *relation*, and are susceptible of comparison. And 4. Those impressions which arise from our wants, and which compel us to seek a gratification of them. The first class

* Article *Condillac*.

of impressions gives rise to *feeling* simply, the second to *memory*, the third to *judgment*, and the fourth to *will*. This constitutes the entire man.

We cannot refrain from noticing a small work by an unknown author, entitled, *Principes de la Logique* (1793), which displays an enlightened spirit, and a correct conception of logic, both as a science and an art. It is divided into two parts. In the first the author observes, that little or no advancement can be made in sound knowledge, unless we take a comprehensive view of the powers of the mind, and institute a rigid examination into the origin of all those primary principles of thought and feeling which constitute what we term humanity. Mere technical arrangements and forms of reasoning will of themselves prove useless, in the way of giving a decided progressive character to valuable and popular truths among the great bulk of mankind. Truth, even in matters of science, is a thing to be felt as well as understood; and, unless we conduct our logical operations on the broad basis of human nature, we run a certain risk of failing in realizing any increase of knowledge applicable to the great end or purposes of human life. There is unquestionably much in this study of scientific logic that is difficult and perplexing; because every man is apt to look at the subject from his own nature. Hence arise doubt, partiality, one-sidedness, and misapprehension. But still, if a love of truth animates our inquiries, and guides us in all our conclusions, we shall soon find that a comprehensive logic is one of the most direct and powerful instruments in elevating and improving the intellect of a nation.

In the second part of the author's volume, he goes into an examination of the nature of formal propositions, and gives a short account of the rules and attributes of the syllogism. These he conceives are useful; but the mind should look beyond them, and only recognise their validity as a *part*, and not the whole, of the mental economy of reasoning.

CHAPTER XV.

LOGICAL SCIENCE IN HOLLAND AND BELGIUM, FROM THE PUBLICATION OF LOCKE'S "ESSAY" TILL THE END OF THE EIGHTEENTH CENTURY.

IN Holland and Belgium, logical speculation presents, during this period of history, but few materials for lengthened comment. Such works as appeared from time to time, were characterised by a serious and contemplative air, dwelling on the moral obligations implied in every art of reasoning, and looking on logic as one of the chief instruments for the extension of general information and science. These views were supported and strengthened by the fervid and profound religious feelings which generally pervaded the entire community of these countries.

The opinions of Descartes and Leibnitz exercised, for the whole of the eighteenth century, great influence in this section of the European continent. The *method* of the former, and the *pre-established harmony* and the *principle of contradiction* of the latter, constituted the basis of the logical philosophy generally cultivated. Bacon and Locke were well known, and on many points highly appreciated.

The logical treatise of Gravesande was, for many

years after his death, a general favourite in several of the most distinguished seats of learning on the continent. He classifies our complex or general notions, shews the nature and use of propositions, points out the principle which guides the intellect in judging of probable and necessary truths, and singles out very carefully the chief sources of our errors in reasoning; and lays down also many excellent rules for fixing the attention of students, and strengthening their memories and understandings. In addition to all these, he shews the use of analysis and synthesis, and the advantages to be derived from the use of theories in many departments of human knowledge.

The *Logica, sive ars Ratiocinandi* of John le Clerc, forms the first volume of his *Opera Philosophica* (1722). He was a native of Geneva, but settled and died in Holland. His Logic is divided into four parts: on Ideas, on Judgments, on Method, and on Argumentation. It is an excellent work of its kind, incorporating much valuable philosophical thought with the common rules and principles of logical science.

Allard Hulschoff was a native of Gröningen, and born in 1734. He was the author of several works which discuss the leading principles of philosophical logic. He dissented particularly from the doctrines of Leibnitz and Wolff; and maintained, in fact, that their several views led to scepticism and infidelity. All the principles of truth, and all the modes of investigating and promulgating it, must have a direct reference to a Deity. This was the fundamental maxim which Hulschoff took as his starting-point. Every portion of the inward man has an especial sympathy with a spiritual

being, whose existence and attributes form the groundwork of all human knowledge.

Dion. Van de Winpersse published his *Institutiones Logicæ* at Gröningen in 1767. He was a professor at the university of that place, and afterwards at Leyden. His logical work had long a considerable reputation in Holland, and formed the text-book in many seats of learning. His views of logic as a science are of an eclectic character. About the same period Elie Luzac published at Gröningen his *Récherches sur quelques Principes des Connaissances Humaines*. He upholds the logical opinions of Leibnitz and Wolff. A few years later Dan. Wytttenbach wrote his *Præcepta Philosophiæ Logicæ* (1781), which, though of a scholastic, is of a judicious character. He maintained for many years an angry controversy with Van Hemert on the nature of Kant's *Pure Reason*. Wytttenbach was violently opposed to Kant's general system of logical truth, and invariably predicted that it would, before many years passed over, be entirely neglected and forgotten.

Paul Van Hemert introduced Kant's philosophical logic into Holland. His views of truth in its highest attributes are the following:—All science is distinguished by four qualities—it is general, special, true, and necessary. Error is the result of the contracted nature of the human mind. The senses by themselves could never lead to truth. Truth lies in the reason. The nature of this reason Van Hemert discusses at great length. He shows the objective character of our sensational system—what constitutes the basis of synthetic unity, the origin of analytical judgments, the nature and offices of analogy, of union and diversity, of

matter and form, of idealism and realism, so far as they affect our judgments and modes of reasoning; the limitations of human knowledge, and its division into theoretical and practical. These topics are all treated of in reference to the great question, What is truth?

Johann Kinker, who was born near Amsterdam in 1764, took a lively interest in the dissemination of Kant's philosophy in Holland. According to Kinker's notions, the mind, in its acquisition of general knowledge, runs the following course:—Objects act directly upon it through the external senses. We then, by a determined inward act or process, collect a certain number of these perceptions together, and this collection constitutes a conception. The mind, in like manner, combines a certain quantity of those conceptions under one head; and by this means reasoning and argumentation are produced. Propositions of every kind, when fully analysed, will be found to be the result of this simple process.

In Belgium the principles of some of the French logicians gained a footing in the latter part of this century. The systems of Condillac and Destutt-Tracy were known and admired among a certain class of thinkers; but in the colleges and seminaries of learning, they never, so far as I know, formed a part of the general routine of logical instruction. The clergy, both in Belgium and Holland, kept a watchful eye over these French theories; and, though unable to prevent their introduction altogether, they were always powerful enough to check their general growth and cultivation.

CHAPTER XVI.

PROGRESS OF LOGICAL PHILOSOPHY IN ITALY AND SPAIN,
FROM THE TIME OF LOCKE'S "ESSAY" TILL THE END OF
THE EIGHTEENTH CENTURY.

FROM the days of Bruno, Cardan, and Campanella, logical and other kindred speculations on mind had been very little cultivated in Italy. Philosophy in general had been unfruitful for nearly an entire century. Bacon, Locke, and Gassendi, had made a partial impression on the reflective mind of the nation; but still their respective modes of handling logical methods and rules had, at the commencement of the eighteenth century, been but little influential on the philosophical literature of the country. The spirit of enlightened innovation was heard but here and there in a whisper; a general apathy and indifference predominated in all the seminaries of learning; and the deathlike stillness which every where prevailed, formed a striking and saddening contrast with the philosophical vigour and activity of the Italian mind of the preceding century.

The first manifestations of what we may justly enough call the second or modern revival of speculation in Italy, were in the direction of logical philosophy. And we

here witness, what is visibly imprinted on the entire history of abstract literature, that the first impulse experienced in the several epochs of intellectual progression has invariably assumed a dialectical character. This was the case in Greece. Socrates, Plato, and Aristotle, by their respective logical methods, gave order and consistency to the scattered fragments of human knowledge, and thereby imparted to them a useful and practical efficiency. The Christian system conferred new logical canons on the nature, importance, and promulgation of truth. In the various philosophical epochs of mental history, from the first introduction of this system to the time of Charlemagne, we find the logical element the chief innovator, and ruling and claiming precedence over every other. The first intellectual movement at the commencement of the middle ages, by the Arabian philosophers and the scholastic divines, is indicated by an inquiry into the nature of particular and universal ideas, and the offices they respectively hold in the logical economy of the mind. And every phase of scholastic learning, mapped out by the hand of the mental historian, is solely characterised by the novel methods of philosophising, and the fresh rules of logical deduction, then brought conspicuously before the public mind for general discussion.

And when this lingering, though vehement contention, on the merits and abstract nature of logical forms and principles, had exhausted itself, we contemplate with pleasure the first dawn of intellectual freedom in Italy, at the grand revival of letters and literature under the fostering care and munificence of the Medici family. But here, again, philosophy presents the same aspect.

It was in reference to the comparative value of ancient logical methods and systems, that the energetic and active spirits of that day displayed their learning, and taxed their ingenuity. When the discussions in this direction came to a close, we are introduced to the important logical epoch of Bacon, whose name is imperishably imprinted on the memorials of modern philosophy, not for the amount of what he himself knew, but on account of his pointing out the path or logical method for the guidance and direction of those who might come after him. This was the crowning glory of the Lord of Verulam. Then after him we have Hobbes, Locke, Descartes, Leibnitz,—all of whom have become landmarks in the history of modern speculation, chiefly from the development of their respective plans of logical method, and their liberal and enlightened suggestions as to the most sound and efficient rules for the improvement and guidance of the human faculties, in the pursuit of general truth and science.

And this predominance of the logical element in the history of human progress, presents nothing but what *a priori* reasonings would lead us to expect. Knowledge of all kinds is a personal thing, and must die with the possessor, unless means be taken to perpetuate it. The disproportion between those who have a large share of scientific information, and those who are comparatively destitute of it, and to whom it is desirable it should, in as ample a measure as possible, be communicated, is, and ever must be, great and palpable. The inquiry, then, which every reflective mind institutes within itself is, How shall I be able to impart the knowledge I have to others? Which is the shortest

and most effective plan of instruction? How shall I gain possession of the minds of others at the least possible cost of time and labour? How shall I most surely secure myself and others from erroneous conceptions of what I do wish to communicate? How shall I clothe or present truth in the most engaging and fascinating forms? These, and a thousand questions of a like nature, pass through the minds of all who are engaged in the pursuit and dissemination of knowledge. And the great object with every philosophical inquirer is, and ever will be, to lay his hands on such intellectual instruments as are best fitted to accomplish the urgent business he has in hand, of communicating what he knows to the minds of others. It is this necessity of our condition which sets us at all times in eager pursuit for logical methods, and which has, through the vicissitudes of ages, sustained that lively interest which mankind have felt in every scheme or plan which promised aid to the reasoning powers or faculties of our nature. The moment knowledge is obtained, there is a strong and instinctive desire to communicate it; and we set to the task of finding out those formal and scientific rules of thought which we conceive most likely to effect our purpose. This is one of the most conspicuous attributes of our mind, when viewed in its active and practical manifestations.

This innate desire after logical methods and rules is strikingly illustrated in the state of Italian philosophy at the period we are now treating of. We have the illustrious Vico before us, with his *Scienza Nuova*, or New Science. He felt himself dissatisfied with all the logical methods that had gone before him, and was

bent upon finding out, if he could, a more comprehensive and satisfactory one. It was to be a regular *organon*, to account for all knowledge, and to lead the mind, by short and unerring steps, to the real source of all our rational conceptions and judgments. Bacon, Locke, and Descartes, had only given a one-sided and partial view of the reasoning powers of man, and of the fundamental principles of scientific thought. But Vico was prepared, in his *New Science*, to place human knowledge on a solid basis. He did not invoke a profound metaphysic to effect this end. He wished to direct the attention of philosophers and logicians more to the outer world of human action and passion, than to refined abstract contemplation. The materials for his theory, he contended, were scattered around him in rich and varied profusion; and it only required the application of some comprehensive principle to combine and arrange them into a consistent and harmonious unity.

There are, according to Vico, two essential matters connected with the cultivation of all knowledge which it is requisite we should know,—namely, the end or object of all studies, and the best means of prosecuting them. The grand object of all knowledge is, to refine and exalt human nature, and to bind us more closely to Deity. There are three elements of all divine and human science—knowledge, will, and power. The whole rests on intelligence; not on a blind, unaccountable, or irrational power. The eye of this intelligence is reason; and the eternal flambeau of reason is Deity. These three elements furnish us with conceptions of our own personal existence, and we can in turn explain

them again by the power of thought. The first principles of all wisdom and truth rest upon God ; denuded of this spiritual and immaterial conception, they are unintelligible.*

In order to develop the principles of truth and certainty, we must analyse or reduce them to their original elements, which are,—1st, Human manners and customs, and social and civil institutions ; and, 2d, Language, which is the key to the human understanding. It is from these that the primary principles of a comprehensive logic can be revealed to our minds. Let us look into man as he is portrayed in his aggregate union with his kindred, and we shall be sure to find all those general ideas on which human science rests.†

“ Logical philosophy,” says Vico, “ contemplates reason, and forms the science of truth. Philology, or language, recognises the authority of human judgments, and this creates the consciousness of conviction. Logicians and grammarians deceive themselves if they neglect to give mutual aid to each other. The intention of our being is, that there should be a mutual reaction between them. Human judgment, uncertain in its nature and conclusions, obtains by their union the infallible sanction of *common sense* in matters of urgency and utility. This common sense, the guide of the argumentative powers of men, is an unreflecting judgment, which is felt, or rather formed, by a community, a people, a nation, and, in fact, by all mankind. Uniform ideas, under the guidance of uniform logical principles, created among an entire people who have no

* Del Metodo, t. 2.

† Scienza Nuova, pp. 10, 15, 60.

individual knowledge of each other, must be stamped with the seal of truth.”*

The foundation of all logical science, when brought to the test of practice, is to be found, says Vico, in *method*. It must embody the formal processes of thought, as well as universal ideas of science or truth. In order, however, to enable us to fix on true scientific methods, we should endeavour to form right conceptions of the end or purpose which every chain of reasoning is intended to accomplish. A desire to know the truth is indispensable to finding it. We should bear in mind that all true science or wisdom perfects the understanding and regulates the conduct. The most momentous of all kinds of knowledge is that which relates to Deity; and the rule which should guide our faculties in the pursuit of truth is, that we select only those things for logical inquiry which are fitted to produce the greatest amount of good to mankind.†

Genovesi was a distinguished logician, and introduced into Italy a knowledge of the writings of Locke and Leibnitz, and likewise the logical systems of Tschirnhausen, Christian Thomasius, Wolff, and Rudiger. His works are, *Elementa Artis Logico-Criticæ* (1767), and *Della Logica* (1799).

Genovesi's logic is founded on a psychological view of the mind. He points out three formidable obstructions to sound knowledge, which he calls maladies of intellect, with the object of pointing out the means by which they may be removed. He distinguishes four kinds or sorts of ignorance—the want of notions or

* Del Metodo, t. 3. Paris, 1844.

† Ibid., t. 2.

ideas; a want of the power of conception; our incapacity of recognising the relations of one thing to another; and the want of perceiving the relation of ideas to a common end or object. There are likewise four species of erroneous judgments: in our primary conceptions or general notions; in our conclusions; in our trains of reasoning; and in our method. He attributes errors to three sources,—those which arise from the mind itself; those which relate to material substances; and those which spring from the influence of external agencies generally.

All knowledge is referred by Genovesi to four primary principles—consciousness, sensation, testimony, and reasoning. Our various ideas or conceptions may be all arranged, for logical purposes, under four heads, according to the way or manner in which we consider them,—1st, Whether considered relatively to their origin; 2d, Relatively to themselves; 3d, In relation to the objects they represent; and, 4th, According to the way or mode in which they may be represented to us.

Under the first point of view, ideas are adventitious, fictitious, and natural. Adventitious ideas are those arising from sensation, from material bodies, their different qualities, forms, and modes of action. Fictitious ideas are formed in our understandings from similitude, proportion, association, abstraction, and deduction. Natural ideas, which some call *innate*, constitute the foundation of the conceptions we have of our own existence, all the internal phenomena of the thinking principle, and the notions we have of truth, justice, right, intelligence, and the like.

Ideas under the second general aspect are intelligible

or sensible, simple or compound. Under the third aspect they are positive or negative, adequate or inadequate, singular or universal, absolute or relative, abstract or concrete, real or chimerical. Ideas under the last aspect are either clear or obscure, distinct or confused.

Every system of logic, Genovesi conceives, ought to be based on a knowledge of the power or faculties of the mind.

The nature of truth and its *criterium* are discussed at considerable length. There are four kinds of it,—moral, natural, metaphysical, and logical. His general opinion is, that every department of human knowledge has a peculiar species of evidence belonging to itself. There is, for example, the criterium of reasoning applied to all the abstract sciences; physical certainty to all matters belonging to natural history and philosophy; and moral evidence to whatever relates to human nature.

The following observations are from the pen of a modern Italian author on the merits of Genovesi as a philosophical logician:—"Few can lay juster claims to the title of a reformer of Italian philosophy than Genovesi, who not only made it known to, but respected by, the learned of other countries. He knew how to enrich it with sound logical strictures, profound metaphysical discussions, and correct moral reflections. However numerous and distinguished the philosophers who have trodden the same path before him, or who have anxiously endeavoured, by profound meditations and sound maxims, to assist the mind to think closely and clearly (and Bacon, Malebranche, Locke, Wolff,

and others, have almost exhausted every thing which could be said upon the subject), still Genovesi knew how to embellish his subject with original speculations and remarks, and to furnish his readers with a system of logic, not only full and complete for philosophical purposes, but highly useful to private individuals, and for the purposes of civil society.”*

The *Elementa Logicæ* (1762) of J. B. Scarella is a work of merit, considered as a popular manual of logic. It is founded on a knowledge of the mental faculties, and is eclectic in its character; the author having culled out whatever he thought useful from the writings of Descartes, Locke, and Leibnitz. Scarella's theoretical view of logical science rested upon two principles—that the senses furnish one set of truths, and the mind, from its own internal resources, another. J. Gualberto de Saria, in his *Rationalis Philosophiæ Institutiones*, illustrated the logical principles of Genovesi with great eclat at Pisa, and other cities in Italy. His labours are chiefly directed to the laying down useful and general rules for the government of the understanding in its prosecution of science. Claude Fromond wrote a work entitled *Della Logica* (1762), in which he attempted, and with considerable success, to popularise logic, by stripping it of many of those formal technicalities and minute divisions which the scholastic times had imposed upon it. His own terminology is often, however, more troublesome and perplexing than the old language he has displaced.

Baldinotti was a philosophical logician of distinction and note. In his *De Rectâ Mentis Institutione* (1787),

* D. Juen. Andres. Venice, 1800.

he lays down the general principles of a comprehensive logical system, embracing human knowledge in its totality. Though every system of this kind must rest on mental philosophy, yet the application of all the general rules of a philosophical logic must be illustrated from the models of thought and wisdom which posterity has left us, and the actual discoveries in science which history records. A successful prosecution of truth lies more in the mode of treating it than is commonly imagined. Scientific knowledge must be prosecuted in a given way and manner : we must bring the mind to grasp many principles and objects at one and the same time, to view them in all their varied relations to each other, and then to draw the lessons they are fitted to impart with logical precision and fidelity. A philosophical spirit is a spirit which regulates itself by means of a method or a congeries of methods—all tending to some given end or purpose, and at the same time paying a most rigid adherence to unity of action and result.*

The name of Facciolati stands high in the logical literature of Italy. His logical works are the following—*Rudimenta Logica, Institutiones Scholæ Peripat., Acroases Dialecticæ*. He grounds his system on the views of Aristotle. There are two sources of certainty—the one historical, and the other the internal or *living sense*, which testifies our own feelings and existence. The rules of reasoning are developed by Facciolati with much care and minuteness ; and his suggestions for the government of the understanding in the pursuit of truth, are at once profound and practical. Franc. Soave, in

* De Rectâ Ment. Instit., p. 583.

his *Institutiones de Logica*, illustrates the leading principles of Locke's *Essay*, which he considered the best work that had then appeared on the logical training of the mind. Soave pays great attention to the bearings of language on logical operations; but he denounces the employment of mathematical forms of reasoning in moral subjects, as destructive of all sound knowledge.

Mazzarelli, in his *Il buon uso della Logica in Materia di Religione* (1787), discusses the science of logic through the medium of theology. Taking the Scriptures as the foundation of all truth—the standard by which its character and value are to be estimated—he institutes the inquiry, how far the ordinary notions entertained of logic are in unison with the declarations and doctrines contained in the sacred canons. We cannot reason soundly in theology, he maintains, unless we take into account the special nature of the evidence which the science of religion presents. Its fundamental principles being both of an abstract and declaratory nature, they demand the application of special logical rules to demonstrate every proposition connected with them; which rules may, or may not, as circumstances require, be requisite in other branches of speculative inquiry. The author illustrates these views in a variety of ways, and accompanies his illustrations with many profound and excellent remarks on the science of general reasoning.

In the speculations on scientific logic advanced from time to time in the Transactions of the Academy of Turin, the reader will find many topics handled with acuteness and ability. Saint-Raphaël, Tiraboschi, Denina, Lampredi, and M. Falette-Barrol, have dis-

cussed, from various points of view, the primary principles relative to the abstract nature of truth, and to the operations of the mental faculties, as manifested in the process of general reasoning, and the development of scientific methods of investigation. Many of the papers inserted in the Transactions, from the pens of these authors, evince a truly philosophical and enlightened spirit.

Vincenzo Micheli discusses the logical principles of Leibnitz and Wolff at considerable length. He enters with great fervour into the questions of necessary connexion, sufficient reason, and the principle of contradiction, with a view to shew their fundamental bearing upon all the deductions of the understanding.

The logical philosophy of Italy, during the period now under review, presents, on the whole, an intelligent and improving aspect. Questions were examined under the influence of a sincere love of truth, and an ardent desire to bring logical studies to bear upon the ordinary pursuit of knowledge, in such a manner as to facilitate its acquisition and dissemination. This was the general character of the published or regular treatises on logic; but with respect to the teaching of the science in the old-established universities and colleges in the several states in the kingdom, there was little or no change visible during the eighteenth century. Almost all the ordinary epitomes or abstracts of the science, more directly used for educational purposes, were entirely confined to the illustration of the old scholastic doctrines,—no new element of modern philosophy being admitted into the formal and technical arrangements of the subject. The logical instruction

directed and imparted by collegiate institutions, embraced therefore a very limited range, compared with that which was afforded by the philosophical treatises of the most able of the Italian logicians.*

The logical writings of Spain during the eighteenth century are but few in number, and of little intrinsic merit. We have the *Logic* of Louis-Antoine Verney (1750), which contains some enlightened philosophical views of the science. The author lays great stress upon *method*. He arranges all human knowledge under three categories, — substances, modes, and relations. Universal notions are necessary to every act of reasoning; and the mind forms them by contemplating those qualities which objects have in common, and abstracting that in which they differ. Language enables us to record these general conceptions; but, though an indispensable instrument in all dialectic exercises, it is nevertheless one which gives rise to a vast number of errors. Our judgments are of three kinds, — nominal, real, and ideal. Verney considers this a most important division, and thinks logicians have committed serious blunders by not keeping it in view. Besides errors from this source, there are others to which the understanding is liable from the delusions of the senses, the power of imagination, and the abuse of the theoretical spirit. Truth is the result of an act of comparison between the *subject* and the *attribute*.

* I regret I have not been able to meet with the *Milan* edition of Galileo's works, which contains his views of logical science.

CHAPTER XVII.

PROGRESS OF LOGICAL SCIENCE IN GREAT BRITAIN AND IRELAND, FROM THE TIME OF LOCKE'S "ESSAY" TILL THE END OF THE EIGHTEENTH CENTURY.

THE history of the science of logic in Great Britain, during this period, is marked by some features of interest and importance. One of the principal of these is, the almost utter discredit into which the syllogistic or school logic fell in general estimation. It was almost unanimously scouted and condemned, by writers of every grade and system, as a useless and sophistical instrument; and even where it was still retained in treatises on logic, it was viewed more in the light of an antiquarian relic than as a thing possessing any intrinsic value in any plan of general education.

It is necessary to premise here, that this chapter will be devoted almost exclusively to works not immediately connected with university or academical systems of tuition, but solely such as treat of logic as a part or division of mental philosophy. I shall give an account, in a subsequent chapter, of the systems of logical instruction which have, for a certain number of years, been followed in most of the universities and colleges of our own country.

First, then, I shall notice a small and very scarce volume, though a little out of chronological order, written by one Thomas Tyrwitt, bearing the date of 1652, entitled, *Solid Reasons for Philosophizing*. It appears to have been printed and published at Winchester. It is entirely directed against the logical doctrines contained in the *Novum Organum* of Bacon. Tyrwitt maintains that the system of reasoning laid down in that celebrated treatise, cannot lead the mind to right conclusions as to the moral and religious nature of man; matters which are, he says, of the deepest importance both to individuals and society. He observes, that "the mode or fashion of going from fact to fact, and testing and cross-questioning nature in every possible form, cannot satisfy the wants of the mind; for the power of creation, and the arrangement of materials, are the things which, in seeking after knowledge, we are constantly in search after." In another place, he prophesies that his lordship's view of science "will only tend to be a will-o'-the-wisp to mankind."*

The publication of Mr Locke's *Essay* excited great attention throughout England; and many were the pens directed against particular portions of his treatise. Among his opponents, Dr Lee holds a distinguished place, chiefly from directing his remarks, embodied in his *Anti-Scepticism* (1702), to those parts of Mr Locke's work which have a logical bearing and import. Lee's observations on the nature of propositions in general, are in many instances both ingenious and sound; and there will be found, in this part of his work, many principles faintly shadowed forth, relative to the nature

* Pp. 132, 184.

and province of reasoning generally, which subsequent English writers have more fully developed, and made the groundwork of their logical theories.

On the abstract nature of truth, and of the mind's manner of perceiving and estimating it, we have a great deal of valuable information and acute reasoning, in Norris's *Theory of the Ideal or Intelligible World* (1701). There is much of the same kind of speculation relative to the logical foundation of truth, and to those faculties of the mind more immediately connected with the reasoning process, as that which characterises the writings of Malebranche, and others of the same school. The first volume of Norris is the most interesting.

Dr Watts' *Logic* (1728) was the first popular fruit, in England, of the speculations of Locke, on the mental powers and faculties, as connected with reasoning, and the advancement of knowledge generally. The work has been a great public favourite for more than a century and a quarter; and such is its happy adaptation of logical materials, that it promises fair to maintain its position, in spite of changes of opinion and systems, for many years to come.

The author says, that "logic is the art of using reason well in our inquiries after truth, and the communication of it to others." Again, he says, "The design of logic is, to teach us the right use of our reason, or intellectual powers, and the improvement of them in ourselves and others."

He divides his *Logic* into four parts, according to the old scholastic fashion, but with a very extended meaning and application; namely, perception (used as synonymous with conception or apprehension), judgment, reasoning, and disposition.

The first part is appropriated to long discussions on the general nature of our ideas—the objects of our conceptions; the general divisions or kinds of them; the words or signs by which these ideas or conceptions are expressed; and general and special rules and directions how to mould and direct these mental materials to a given end or purpose. The second part relates to judgments and propositions. The author enters into an examination of the nature and offices of these; the various sorts of them; what general directions should be observed, in order that we may judge soundly; and what special rules should likewise be attended to, in order to arrive at right conclusions on particular subjects and questions. Reasoning, properly so called, is treated of in the third part. This embraces the nature of syllogistic forms; the doctrine on which they are founded; the nature of erroneous judgments, and how they may be avoided; and general rules for the guidance of our reasoning powers on all subjects to which they may be directed. The fourth and last part relates to disposition or method. This must be fully considered, along with all the general and special rules which come under it, in applying it to human knowledge in all its bearings and ramifications.

Watts' *Improvement of the Mind* is a supplement to his *Logic*. It embodies a vast amount of just and useful observations on the government of the mind, and in connexion with education generally. Dr Johnson, in his *Life of Watts*, observes that “few books have been perused by me with greater pleasure than his *Improvement of the Mind*, of which the radical principles may indeed be found in Locke's *Conduct of the Understand-*

ing; but they are so expanded and ramified by Watts, as to confer on him the merit of a work in the highest degree useful and pleasing. Whoever has the care of instructing others, may be charged with deficiency in his duty if this book is not recommended."

Dr Duncan's *Logic* (1760) is a work of precisely the same cast and character as that of Dr Watts. Duncan was professor of moral philosophy at Aberdeen, and this gave his volume no small degree of influence, not only in his own country, but even in England. It is plainly and simply written, and has proved a really useful and instructive volume. It has, like Watts' work, gone through many editions; but it has not by any means been so popular, in the southern part of the island, as the *Logic* of the English divine.

Dr Duncan's volume proceeds on the same logical hypothesis as Locke assumed in his *Essay*. The understanding is represented as advancing from one step of knowledge to another, and exerting various distinct acts, according to the degrees of progress it makes. To watch and record these steps is the chief office of the logician. The principal divisions into which logic, as a science, is mapped out, are used to explain the procedure of the mind in its different stages of improvement. The rules and observations requisite for this purpose must be drawn from a knowledge, more or less extensive, of the mind itself, viewed chiefly in a psychological aspect; and therefore some account of its various powers and faculties becomes necessary, agreeably to this theory, in order to give clearness and force to the illustrations of logical or scientific rules and methods.

The doctor has followed the same scholastic division of logic as Watts has done. There are four books. The first treats of simple apprehension — a subject which embraces a copious account of the origin of our ideas, the various kinds or sorts of them, the manner in which knowledge is derived from them,—together with some observations on the rise, progress, and nature of language in general, and its specific application to logical subjects in particular. The second book is devoted to the consideration of our judgments or intuitions. Here the doctrine of propositions is developed, and their division into self-evident and demonstrable made apparent. The third book brings us to the syllogism, which is illustrated in the ordinary way of most school treatises on the subject. The fourth book ends with method. This the doctor thinks important. It can only be made use of with advantage, he remarks, when our mental faculties have been exercised, and some decided progress in general knowledge made. He observes, that “when a man, accustomed to much thinking, comes, after any considerable interval of time, to take a survey of his intellectual acquisitions, he seldom finds reason to be satisfied with that order and disposition according to which they made their entrance into his understanding. They are there dispersed and scattered without subordination, or any just and regular coherence; insomuch that the subserviency of one truth to the discovery of another does not so readily appear to the mind. Hence he is convinced of the necessity of distributing them into various classes, and combining into one uniform system whatever relates to one and the same subject. Now, this is the

true and proper business of *method*,—to ascertain the various divisions of human knowledge, and so to adjust and connect the parts in every branch, that they may seem to grow one out of another, and form a regular body of science, rising from first principles, and proceeding by an orderly concatenation of truths.”

The two treatises of Watts and Duncan tended greatly to obliterate from the public mind of this country, every vestige of esteem and reverence for the scholastic logic. But, besides these, there were other writers whose speculations, partly metaphysical and partly logical, tended still more to increase the disregard of the principles and forms of the Aristotelian system. These antagonists of formal logic were most energetic and zealous in the northern portions of the island. Among their number, 'Dr Campbell stands conspicuous. His *Philosophy of Rhetoric* (1762) is a work which, during the latter part of the last century, exercised a marked influence, indeed, over the general current of logical thought in Great Britain. And his treatise is not destitute of influence even at the present day. He appears to have entertained very decided opinions on the nature of the syllogistic theory of reasoning. He says, “The method of proving by syllogism appears, even on a superficial review, both unnatural and prolix. The rules laid down for distinguishing the conclusive from the inconclusive forms of argument, the true syllogism from the various kinds of sophisms, are at once cumbersome to the memory, and unnecessary in practice. No person, one may venture to pronounce, will ever be made a reasoner who stands in need of them. In a word, the whole bears the

manifest indications of an artificial and ostentatious parade of learning, calculated for giving the appearance of great profundity to what in fact is very shallow. Such, I acknowledge, have been, for a long time, my sentiments on the subject. On a near inspection, I cannot say I have found reason to alter them, though I think I have seen a little further into the nature of this disputative science, and consequently into the grounds of its futility."

Dr Campbell says again, in reference to the general character of the scholastic logic, "that the disputation of the schools became to be so much a mechanical exercise, that if once a man had learned his logic, and had thereby come to understand the use of his weapons, and had gotten the knack of wielding them, he was qualified, without any other kind of knowledge, to defend any position whatsoever, how contradictory soever to common sense, and to the clearest discoveries of reason and experience."

After making some observations on the abstract nature of the syllogism, which he thinks is resolvable into a mere identical proposition, the doctor sums up the whole discussion with these words:—"What shall we denominate the artificial system or organ of truth, as it has been called, of which we have been treating? Shall we style it the art of reasoning? So honourable an appellation it by no means merits, since, as hath been shewn, it is ill adapted to scientific matters. Shall we then pronounce it the science of *logomachy*, or, in plain English, the art of fighting with words, and about words? And in this wordy warfare shall we say that the rules of syllogising are the tactics? This

would certainly hit the matter more nearly ; but I know not how it happens, that to call any thing *logomachy* or *altercation* would be considered as giving bad names ; and when a good use may be made of an invention, it seems unreasonable to fix an odious name upon it which ought only to discriminate the abuse. I shall therefore only title it the scholastic art of disputation. It is the schoolmen's science of defence.”*

Lord Kames was another Scottish writer who spoke lightly of the school logic. In his *Sketches of the History of Man* (1770), he says : “The slow progress of useful knowledge during the many ages in which the syllogistic art was most highly cultivated as the only guide to science, and its quick progress since that art was disused, suggest a presumption against it ; and this presumption is strengthened by the puerility of the examples which have always been brought to illustrate its rules.” “The ancients seem to have had too high notions, both of the force of the reasoning power in man, and of the art of syllogism as its guide. Mere reasoning can carry us but a very little way in most subjects. By observation and experiments properly conducted, the stock of human knowledge may be enlarged without end ; but the power of reasoning alone, applied with vigour through a long life, would only carry us round like a horse in a mill, who labours hard, but makes no progress.” “When the power of reasoning is so feeble by nature, especially in subjects to which this syllogistic theory can be applied, it would be unreasonable to expect great effects from it. And hence we see the reason why the examples brought to

* Vol. i. p. 182.

illustrate it by the most ingenious logicians have rather tended to bring it into contempt." "Although the art of categorical syllogism is better fitted for scholastic litigation than for real improvement in knowledge, it is a venerable piece of antiquity, and a great effort of human genius. We admire the pyramids of Egypt, and the wall of China, although useless burdens on the earth. We can hear the most minute description of them, and travel hundreds of leagues to see them. If any person should with sacrilegious hands destroy or deface them, his memory would be had in abhorrence. The predicaments and predicables, the rules of syllogism, and the topics, have a like title to our veneration as antiquities. They are uncommon efforts, not of human power, but of human genius; and they make a remarkable period in the progress of human reason."

Speaking of reasoning in general, his lordship says, that "all real knowledge of mankind may be divided into two parts,—the first consisting of self-evident propositions; the second, of those which are deduced by just reasoning from self-evident propositions. The line which divides these two parts ought to be marked as distinctly as possible, and the principles that are self-evident reduced, as far as can be done, to general axioms."*

Lord Kames' *Introduction to the Art of Thinking* contains little or nothing of a logical character.

Dr Beattie's *Essay on Truth* (1770) had a great effect in strengthening the antipathy against the scholastic logic throughout Great Britain. The work was exceedingly popular. On the general influence and

* Sketches, vol. iii.

tenor of this species of logic on the character and minds of those who cultivate it, he observes :—"The apparent tendency of the school logic is, to render men disputatious and sceptical, adepts in the knowledge of words, but inattentive to fact and experience. It makes them fonder of speaking than thinking, and therefore strangers to themselves,—solicitous chiefly about rules, names, and distinctions, and therefore leaves them neither leisure nor inclination for the study of life and manners. In a word, it makes them more ambitious to distinguish themselves as partisans of a dogmatist, than as inquirers after truth. It is easy to see how far a man of this temper is qualified to make discoveries in knowledge. To such a man, indeed, the name of truth is only a pretence ; he neither is, nor can be, much interested in the solidity or importance of his tenets : it is enough if he can render them plausible—nay, it is enough if he can silence his adversary by any means. The captious turn of an habitual wrangler deadens the understanding, sours the temper, and hardens the heart ; by rendering the mind suspicious and attentive to trifles, it weakens the sagacity of instinct, and extinguishes the fire of imagination : it transforms conversation into a state of warfare, and restrains the lively sallies of fancy, so effectual in promoting good-humour and good-will, which, though often erroneous, are a thousand times more valuable than the dull correctness of a mode-and-figure disciplinarian."*

Lord Monboddo, in his *Ancient Metaphysics* (1779), is an enthusiastic admirer of the Aristotelian logic. He argues that Mr Locke and all his followers have com-

* Essay on Truth, p. 389.

pletely mistaken the theory of general reasoning, which has no other foundation than the syllogism.

Before Aristotle's time, Lord Monboddo says, "Many philosophers no doubt reasoned very well, and made great discoveries, but they reasoned as the women and children spake; for though women and children, who have been well educated, may speak very well, they do it by mere habit, without being able to give any account *how* they do it: the reason of which is, that they cannot analyse language into its elements." "The philosophers before Aristotle could reason very well; but as they could not analyse reason, so they could not give any rational account why one argument was conclusive, and another inconclusive."

Lord Monboddo keeps no terms with the *common sense* school of logic. He observes: "*Common sense*, they will say, is sufficient to let us know what certainty and conviction are, and when we ought to be convinced, and when not. But I will tell them, that not only *common sense* is not sufficient for this purpose, but even the most *uncommon sense* and the greatest natural genius; and, in order to know what truth and science are, they must either have invented themselves a great system of science, such as Aristotle has delivered in his books of analytics, or they must have learned it from others."

Lord Monboddo defines *logical truth* to be "the perceiving by the act of the mind, comparing together its own ideas or perceptions; and it is distinguished from what is called *metaphysical* or *transcendental truth*, which belongs only to single ideas."

All demonstrative reasoning presupposes, according to his lordship, not only the existence of general ideas, but that there is a principle of subordination running through one to another; that is, one general idea or conception is more comprehensive than another, and the less general is contained in, and makes a part of, the more general one. It is this constitution of things which makes the syllogism, and imparts to it its demonstrative character.

Lord Monboddo's notion of the nature of truth is, that it ultimately rests on a theological basis. There are numerous passages of his work illustrative of this idea. Without religious principle, logical science is unintelligible. He says: "From what I have said of the subordination of ideas, we may observe the progress of things upwards, and the wonderful tendency of all things in nature towards one principle of union. This is to be found in all the several classes of beings, which still rise one above another till they end in that one category to which they belong. And here the analysis of logic ends; but where logic ends *theology* begins, and shews that all the ten categories terminate in one principle, and have one common origin, the *Intellect Divine*, the source of every thing existing, or that can exist in the universe, where all things exist in the most perfect *unity*; for there is not *first* or *last* there, nor the succession of ideas as in our minds, but all things are present at once, and the *past*, the *present*, and the *future*, what is precedent and what is consequent, are seen in one view. In this manner, not only logic, but every other science, ends in *theology*, the summit of all philosophy, and which to know is the perfection of

human nature.”* Again he says: “Truth and science are to be deduced from a much higher source than the human mind, even from God himself.” “Here we may see with what propriety God is called in Scripture the *God of Truth*; for in him are all ideas or species of things, with all their connexions, dependencies, and relations one to another.”

We must call a moment’s attention to the writings of David Hume, who deeply interested himself in the fundamental principles of reasoning. All human knowledge, he affirms, may be embraced in two categories—*impressions* and *ideas*. Impressions comprehend the entire mass of our sensational knowledge; and ideas stand for all those thoughts which relate to the higher functions of the mind—as remembering, imagining, reasoning, &c. His notions, however, on the relation of all sciences whatever to the science of human nature, are so interesting, and have been, in fact, so suggestive to other writers on the principles of logical science, that we must allow this able and subtle writer to state his own case in his own words:—

“It is evident,” says he, “that all the sciences have a relation, greater or less, to human nature; and that, however wide any of them may seem to run from it, they still return back by one passage or another. Even mathematics, natural philosophy, and natural religion, are in some measure dependent on the science of man, since they lie under the cognisance of men, and are judged of by their powers and faculties... If therefore the sciences of mathematics, natural philosophy, and natural religion, have such a dependence on the know-

* Ancient Met., vol. i. p. 484.

ledge of man, what may be expected in the other sciences, whose connexion with human nature is more close and intimate? The sole end of logic is, to explain the principles and operations of our reasoning faculty, and the nature of our ideas; morals and criticism regard our tastes and sentiments; and politics consider men as united in society, and dependent on each other...Here, then, is the only expedient from which we can hope for success in our philosophical researches, to leave the tedious lingering method which we have hitherto followed, and, instead of taking now and then a castle or village on the frontier, to march up directly to the capital or centre of these sciences—to human nature itself, which, being once masters of, we may every where else hope for an easy victory. From this station we may extend our conquests over all those sciences which more intimately concern human life, and may afterwards proceed at leisure to discover more fully those which are the objects of pure curiosity. There is no question of importance whose decision is not comprised in the science of man, and there is none which can be decided with any certainty before we become acquainted with that science. In pretending, therefore, to explain the principles of human nature, we in effect propose a complete system of the sciences, built on a foundation almost entirely new, and the only one upon which they can stand with any security.”

We come now to notice an entire class of writers whose united speculations have given birth to several new views of logical truth, and of the utility of logical systems generally. This class is denominated the *common sense* school of philosophers. Its doctrines are

known wherever science is cultivated. Though not strictly expounders of regular and formal treatises of logic, yet they discussed the leading principles of the science, and came to entertain certain opinions regarding it considerably at variance with pre-existing theories and maxims. The principal writers who constituted this school, and to whose labours we shall now briefly direct attention, are Doctors Reid, Beattie, and Oswald, and the late Professor Dugald Stewart. In shaping our present course, we shall avoid all theological and purely metaphysical discussion, and confine our remarks as closely as possible to the bearing which these speculations have on the broad and scientific principles of logic, and on the nature of those mental powers considered more immediately called into requisition in every act of reasoning and argumentation.

For the sake of those whose knowledge of mental philosophy may be but scanty, we beg to premise that there have been various and somewhat conflicting definitions of *common sense* current among modern philosophers and logicians; but the general meaning of the term, as we shall here use it, is mainly the same as that given of this *sense* by Father Buffier, to whom it originally belongs, and which has been inserted in a previous chapter of this volume. We shall, however, give this definition again:—" *Common sense* is that quality or disposition which nature has placed in all men, or evidently in the far greater number of them, in order to enable them all, when they have arrived at the age and use of reason, to form a common and uniform judgment with respect to objects different from the internal sentiment of their own perception, and which judgment is

not the consequence of any anterior principle." The reader will readily perceive that this *common sense* is not like those senses of seeing, hearing, tasting, and the like, which recognise the existence and qualities of external bodies by a species of intuitive discernment; but it is simply that quality or attribute of mind which men, by virtue of circumstances and age, become experimentally possessed of, and by which they are enabled to form a common and uniform judgment on divers classes of objects or things which come before them. This explanation will be found to coincide substantially with those definitions given of this *common sense* by nearly all writers who have discussed the subject.

The logical doctrines which sprang out of, or received great support from, this *common sense* school of philosophy, may be stated under the following general heads:—

1st, The doctrine which this school maintained relative to the reasoning powers was, that there was a *natural logic*, which was quite sufficient of itself to guide men in their ordinary intercourse of life, and to enable them to sit in judgment on all the most important truths and questions more immediately connected with their own inward nature—their mental, moral, and religious feelings. No formal or artificial systems or rules are here required. The uniformity which human life has presented in all times, and that complete certainty with which we expect certain consequences from certain causes, are irrefragable proofs of the existence of this natural logical talent. The great mass of human knowledge relative to man—as a thinking, moral, social, and religious being—is purely derived

from consciousness, and common sense or experience; and the principles which embody the entire science of man, are the exponents of the common sense feelings and common sense ideas of the generality of men. These principles can neither be detected by any formal logical rules, nor their truth tested by them in any way whatever. They rest on a foundation altogether their own, and refuse to be brought under the technical forms and discipline of the mere school logician. "All reasoning," says Dr Beattie, "terminates in first principles; all evidence is ultimately intuitive; common sense is the standard of truth to man." Again he says, "There are few faculties, either of our mind or body, more improvable by culture than that of reasoning; whereas common sense, like other instincts, arrives at maturity with almost no care of ours. To teach the art of reasoning, or rather of wrangling, is easy; but it is impossible to teach common sense to one who wants it."*

Common sense, it is substantially affirmed by the same school, exercises a larger share of direct authority over the formation and consolidation of some sciences, than many philosophers imagine. Some fixed idea is laid hold of by the mind in ordinary cases, which lies, as it were, on the surface of things; and it serves as a kind of methodical nucleus, around which are arranged a multitude of individual things susceptible of scientific classification, and which collectively constitute a body of truth, having to the individual all the attributes of a regular science. Many men are to be found who have a very considerable portion of information on many branches of knowledge, who have derived it

* Essay on Truth, p. 41.

entirely from a shrewd and painstaking method which they have accustomed themselves to follow in every step of their search after science. Such persons often become quite bewildered when you attempt to shew them the logical beauty and cogency of pursuing their inquiries in accordance with some comprehensive and logical system of investigation. They cannot seize hold of the mere formal thread of thought; and, therefore, work out the problem in their own way and fashion. The common sense views they adopt are grounded upon conceptions not very accurately defined, nor susceptible of intelligible development to others; but to themselves they serve the purpose of giving a full and faithful interpretation of the things of which they are in search. All such scientific conceptions are involved in a cloud of mystery whenever we attempt to penetrate their abstract nature, to inquire into the manner they are formed, or the bond or link which connects them with the general faculties of the mind; but of their real individual existence there can be no possible doubt whatever. Numerous illustrations, confirmatory of these statements, might be derived from the history of every department of human knowledge.

Even in those cases where writers of this school did not feel themselves fully justified in going the extent of maintaining, that natural logic, such as they conceived it to be, was of itself sufficient for the purposes of ordinary education; yet it has been invariably contended, that formal logic was of little or no use without the aid of the natural. Buffier, who was no enemy to the old or technical dialectics, affirms his conviction,

that no logical system can be efficient unless both the common sense and formal systems be united. He says, "The perception, in fact, of first or common sense truths is, as it were, the key to all the sciences; the source or cause of every just decision; the surest guide to the most accurate knowledge; the very soul and essence, in some sort, of all truth in general, which logic attains only in part, though it has the honour to be styled the organ of truth—but it is no more than the organ of truth consequentially. And this supposes principles already known; so that, as experience demonstrates, a man may be an excellent logician, and yet fall into considerable errors from an imperfect knowledge of the first truths; whilst those which are to be drawn from the inmost recesses and most immediate operations of the human mind, belong to that more extensive science which forms the subject of this treatise. If it shall be considered by some truly metaphysical, they will not perhaps be mistaken; but, whatever it may be, it must so closely accompany, precede, or follow logic, that they mutually lend a necessary support to each other. Logic, therefore, remains in some measure incomplete until it be joined to this, which likewise, in various places, supposes the former; but those two articles being united, furnish any thing that relates to the science of the human understanding, and teach us to form thence the true art of thinking justly, and with precision—the object most deserving the attention of man—the most solid fruit of science."*

It is almost unnecessary to remark, that this opinion of Buffier's has been entertained, with some modifica-

* *Prémières Vérités*, p. 2.

tions, by a majority of the most acute logicians of every country in Europe.

2d, The common sense school maintained, that reason was not a single faculty or power, but a complex operation, involving the exercise of nearly the entire intellectual apparatus. It required a due balance to be sustained of all the separate powers of which it was composed. If there were any irregularity in the constitution of the inward man—any power more vigorous than another, and out of keeping with it—there was a corresponding derangement in the reasoning capabilities of the individual, and his chances of being a sound and comprehensive reasoner proportionally diminished. The question was reduced to one of actual experience. This opinion was a favourite one with the late Dugald Stewart; and every reader of his admirable works will readily bring to mind some of those fine discriminations of individual character, which throw such an agreeable charm over many of his abstruse speculations on the powers of reasoning generally. Indeed, this doctrine of the compound character of the argumentative or logical talent, forms at bottom the only substantial grounds for the majority of these rules for what is called *the government of the understanding*—a phrase scattered up and down in almost every logical treatise published within the two last centuries. For example, memory, which instantaneously follows sensation, and serves as a kind of repository or storehouse for all the materials of our experience and observation, is a faculty as necessary, even for the simplest form of logical argument, as the act of comparison itself, from which an inference is said by logicians directly to proceed. And the same

thing may be remarked relative to the share which other intellectual powers have in the general result of all reasoning whatever. Even in mathematical science itself, no progress can be made in it without the active assistance and co-operation of the power of memory with other faculties of the intellect.

3*d*, It is a part of the logical creed of the common sense metaphysicians, that the various departments of human knowledge have particular kinds of evidence or certainty belonging to each ; and, therefore, it is especially requisite that the logical principles appertaining to every individual science should be carefully noted, and considered in all reasonings and conclusions regarding it. Physical science rests on one kind of evidence, mathematical science on another, moral evidence on a third, and so on. There must be no confounding of the one with the other. It would be preposterous, say the writers of this school, to attempt to solve a moral, political, or religious question by the forms and rules of mathematical reasoning. This species of reasoning rests entirely on intuitive conceptions, and consists of an uninterrupted series of axioms. It is solely conversant about number and extension. On the other hand, moral evidence is made up of many detached or isolated ingredients. When we reason about virtue and vice, pain and pleasure, right and duty, there is no standard by which to estimate their different agreements in numbers and figures. In moral evidence we have degrees ; in demonstrative we have none. It is therefore of essential importance that logical systems should treat of these distinctions in the several sciences, in order that rules may be laid down for the govern-

ment and instruction of the understanding in the progress of general knowledge.

4th, The common sense logicians had a great aversion to formal systems of logic. All such systems, say they, have their hold on the minds of men chiefly from their shutting out from attention these general ideas which form the staple, as it were, of thought and intelligence, and are almost ever present to the intellect when in a state of activity. Human thought is so intimately blended with questions of good, right, truth, justice, advantage, enjoyment, and questions connected with practical life and consequences, that when any mere collection of formal rules are presented to the mind's attention, and repeated over and over, the interest flags, and they become positively nauseous and unpleasant.

We cannot handle any thing in the shape of knowledge, without having present in the intellect, in a state more or less vivid and distinct, certain general ideas, such as existence, causation, power, efficiency, agency, &c. These are perpetually obtruding their presence upon us, and imperatively demanding a share of our immediate attention.

The disadvantages arising from an artificial and purely formal system of logic being estimated at more than it is really worth, are graphically pointed out by Dugald Stewart in the following passages:—

“For my own part, so little value does my individual experience lead me to place on argumentative address, when compared with some other endowments subservient to our intellectual improvement, that I have long been accustomed to consider that promptness of reply

and dogmatism of decision, which mark the eager and practised disputant, as almost infallible symptoms of a limited capacity—a capacity deficient in what Locke has called large, sound, roundabout sense. In all the higher endowments of the understanding, this intellectual quality, to which nature, as well as education, must contribute, may be justly regarded as an essential ingredient.” “If these observations hold with respect to the art of reasoning or argumentation, as it is cultivated by men undisciplined in the contentions of the schools, they will be found to apply with infinitely greater force to those disputants who, in the present advanced state of human knowledge, have been at pains to fortify themselves, by a course of persevering study, with the arms of the Aristotelian Logic. Persons of the former description often reason conscientiously with warmth from false premises, which they are led by passion, or by want of information, to mistake for truth. Those of the latter description proceed systematically on the radical error of conceiving the reasoning process to be the most powerful instrument by which truth is to be attained, combined with the secondary error of supposing that the power of reasoning may be strengthened and improved by the syllogistic art.”*

5th, The Scotch philosophers insisted upon the introduction of nearly all questions relating to mind into systems of a logical character. They were not, however, the originators of this mode of procedure—they only carried out the opinions and plans of their predecessors to a greater extent. Disliking the formal

* Phil. of Mind, p. 432.

logic, the common sense school more earnestly insisted on the utility, and even necessity, of extending our examinations into the most abstruse and profound questions of intellectual philosophy, and of laying bare the entire framework of the mind itself. Hence logicians were called upon, before entering on the formal rules of their science, to give some account of the faculties of the mind, cause and effect, the belief in testimony, the nature of experimental and intuitive judgments, and the like. It was impossible, these writers maintained, that a person could make any advances in logic unless he were conversant with all the leading questions relative to the science of mind.

6th, The common sense philosophers imparted a nominalism to the logical speculations of their times. Though Drs Reid and Beattie entertained some opinions on the nature of universals, which might bring them within that class of logicians called *Conceptualists*, yet they were by no means very decided on this point. Their general leaning was evidently towards the nominal theory. Stewart was uncompromisingly attached to this theory likewise; but it is curious to witness, that he was only bold on the subject when an enemy was in the field: for when musing in security, and in a joyous and contemplative mood, he often expresses himself somewhat puzzled by the theory of language, which he generally and strenuously maintained. It may be remarked that the most ultra view of universals agrees better with the leading principles of the common sense theory of logic than with any modifications of the nominal hypothesis.

7th, The formation of what they termed a *philoso-*

phical logic was a favourite theme with the most influential of the common sense school. Wishing to make logic a great and universal instrument, both for the discovery and promulgation of truth, they conceived it could only be made effective for this end by being placed on a much more extended and solid basis than it had hitherto been. Among the things desiderated for this purpose, was a thorough knowledge of the *philosophy of mind*; because without this no just opinion could be formed of the classifications and objects of human knowledge, nor of the rules for the investigation and communication of truth.

The anticipated advantages to be derived from such a philosophical logic, are enumerated by Dugald Stewart to be the following:—1st, Such “an instrument would be of the highest importance in all the sciences to exhibit a precise and steady idea of the objects which they present to our inquiry. What was the principal circumstance which contributed to mislead the ancients in their physical researches? Was it not their *confused and wavering notions about the particular class of truths which it was their business to investigate?*” “If we examine, in like manner, the present state of *morals, of jurisprudence, of politics, and of philosophical criticism*, I believe we should find that the principal circumstance which retards their progress is the vague and indistinct idea which those who apply to the study of them have formed to themselves of the objects of their researches.” “*A philosophical logic would assist us in our particular scientific investigations*,—1st, By keeping steadily in our view the attainable objects of human curiosity; so, 2d, By exhibiting to us the

relation in which they all stand to each other ; and, 3d, The relation which they all bear to what ought to be their common aim, the advancement of human happiness ; 4th, It would have a tendency to confine industry and genius to inquiries which are of real practical utility ; and would, 5th, Communicate a dignity to the most subordinate pursuits which are in any respect subservient to so important a purpose." "From such a system of logic, too, important assistance might be expected for reforming the established plan of public and private education ? It is melancholy to reflect on the manner in which this is carried on in most, perhaps I might say in all, the countries of Europe ; and that, in an age of comparative light and liberality, the intellectual and moral characters of youth should continue to be formed on a plan devised by men who were not only strangers to the business of the world, but who felt themselves interested in opposing the progress of useful knowledge."

2d, "Another very important branch of a rational system of logic ought to be, *to lay down the rules of investigation* which it is proper to follow in the different sciences. In all these the faculties of the understanding are the instruments with which we operate ; and, without a previous knowledge of their nature, it is impossible to employ them to the best advantage. In every exercise of our reasoning and of our inventive powers, there are general laws which regulate the progress of the mind ; and, when once these laws are ascertained, they enable us to speculate and to invent for the future with more system, and with a greater certainty of success." "The *method of com-*

municating to others the principles of the different sciences, has been as much neglected by the writers on logic as the rules of investigation and discovery; and yet there is certainly no undertaking whatever in which their assistance is more indispensably requisite.”*

8th, All reasonings and judgments, according to the common sense of philosophy, must relate to two orders or classes of truths,—contingent and necessary.

Reasonings involving contingent judgments have the following common sense principles as their basis:—

1st, Every thing which is attested to me by the power of consciousness and the internal sense must really exist.

2d, The thoughts of which I am conscious are thoughts of a being whom I call *I*, or *myself*.

3d, The things which memory distinctly recalls to me really happened.

4th, I am certain of my own personal identity from the remotest period to which my memory can carry me.

5th, Objects which I perceive by the aid of my senses really exist, and are as I perceive them to be.

6th, I exert some degree of power upon my actions and determinations.

7th, The natural faculties by which I distinguish truth from error are not delusive.

8th, My fellow-men are living and intelligent creatures like myself.

9th, Certain expressions of countenance, certain sounds of the voice, and certain gestures, indicate certain thoughts and certain dispositions of mind.

* Phil. of Mind, vol. i. p. 31.

10th, We have naturally some regard for the testimony of men in matters of fact, and even for human authority in matters of opinion.

11th, Many events which depend upon the free-will of our fellow-men, may nevertheless be foreseen with more or less probability.

12th, In the order of nature, that which is to take place will probably resemble that which has taken place in similar circumstances.

The necessary truths of common sense are of a grammatical, logical, mathematical, esthetical, moral, and metaphysical character.

The logical philosophy of the common sense philosophers contains little or nothing which can be called original. It is a compound of the doctrines of Bacon, Hobbes, Descartes, Locke, and Leibnitz, and was the natural result of the state of mental science for nearly a couple of centuries before. It is firmly and consistently put together, and made to bear on important and interesting questions connected with the science of human nature. It has had, and always will have, great influence on logical principles and studies; chiefly for this reason, that it is based on the most complete observation of our internal feelings and constitution. Every thing arising out of the operations of the intellect is brought out to open day, and contrasted with the rules of philosophic investigation, and the promulgation of scientific truth, in every department of human knowledge.*

The common sense school of logic entertained lofty

* See the several philosophical works of Reid, Campbell, Beattie, Oswald, and Dugald Stewart.

and refined views of human nature and human science. It displayed, in all its phases, a healthy and invigorating tone. It viewed truth, and the means and appliances to obtain and disseminate it, through the medium of all that was sacred and elevating. Setting out with the open and direct intention of attacking infidelity and scepticism in their strongholds, it threw a wholesome moral responsibility about logical science, which removed it far from every thing sophistical, formal, and trifling. It can bear a favourable contrast with the logical philosophy of France at the same period, where human reason was tested in a very ignoble and scurvy manner. The labours of the common sense philosophers were likewise opportune as well as wise. They tended to counteract, in no small degree, the silly and trashy logical literature so prevalent among our Gallic neighbours during the eighteenth century, and prevented the philosophic mind of Europe generally from running headlong into the same course of folly and flippancy.

This philosophic school of logicians aimed likewise at being extensively useful. They wished to arm human reason at all points, with a view that it might be benefited as extensively as possible from scientific truth of all kinds. Their logic was a logic for the millions. The name they bore indicated the number of their students, and the universal character of their instructions. It was not one portion of the intellectual frame they studied to strengthen at the expense of another; but they directed their attention to that mental cultivation which preserves the vigour and symmetry of the entire inward character, and imparts

to its real beauty and usefulness. This school conceived there was an analogy between the body and the mind; the expertness and flexibility of the fingers might be purchased at the expense of the strength of the limbs, or the general health. So likewise with the intellect. A quickness and cleverness in small matters might be obtained at the expense of solid and enduring qualities. To make the mental soil really generally productive, it must be deeply trenched, and not merely scratched on the surface. Truth is a thing of paramount interest to every human being of whatever station and condition; and the great question is, How shall we bring it home to every man's mind in all its comprehensiveness and variety? The most solid means of doing this are obviously the best. If, say Dr Reid and his followers, we make a young man acquainted with the different kinds of evidence, the best means of applying them, and store his mind with sound and general rules of investigation and reasoning on all important subjects, he will be better fitted for the miscellaneous duties of life, than if merely skilfully versed in dialectical forms and subtleties. This was the practical view the common sense school took of the nature and offices of logic.

CHAPTER XVIII.

OF LOGICAL SCIENCE IN SWEDEN, NORWAY, DENMARK, POLAND, RUSSIA, &c., &c., FROM THE PUBLICATION OF LOCKE'S "ESSAY" TILL THE END OF THE EIGHTEENTH CENTURY.

THE northern nations of Europe became pretty early acquainted with the speculations of Bacon, Descartes, Locke, and other writers on the principles of logic. But the progress of innovation and change was here comparatively slow, and a longer time elapsed ere the philosophic mind in these regions was roused to that pitch which gives birth to new systems, or to great modifications of old ones.

In Sweden, Andrew Rydelius entered warmly, in the latter part of the seventeenth century, into the philosophical opinions of Descartes. We have his *Compendium Logices*, which is a scholastic work both in matter and arrangement. His opinions on the general principles of logical science are to be found in his other publications devoted to mental philosophy. M. G. Block was also a Cartesian, and maintained that the philosophical method of Descartes was the only foundation on which science could be prosecuted with

success. His works bear the date 1708. Joh. Bilberg, in his *Dissertations* on the method of Descartes, manifests his admiration of it, but takes the liberty of differing from his master upon some points of his system. Bilberg affirms, that Descartes' philosophy of reasoning, taken as a whole, gives an undue preponderance to the subjective over the objective element. From Descartes' notion, that assurance is not the same as the standard or criterium of truth, he likewise dissents; because he maintains that assurance must be prior to the reasons on which we rest certainty, and is the only safe and conceivable guide to solid conviction.*

Wolff's logic was a great favourite in Sweden for the greater part of the eighteenth century. Many Swedish logicians, however, abridged and epitomized his system, so as to render it less perplexing and cumbrous for young students. There is a number of these abridgements to be found, in almost every direction, in the northern portions of the Continent.

The logic of Wallarius (1706) was popular, though of a scholastic type. About the middle of this century, Lallenstedt and J. Plenning entered profoundly into the principles of philosophical logic, and discussed various portions of the systems of Descartes, Leibnitz, and Wolff. The nature of method, considered according to the Cartesian hypothesis, as an instrument for a scientific end or purpose; the identification of substance and power—an important ingredient in the Leibnitzian philosophy; and the formal definitions of Wolff—constituted the leading topics of logical discussion in the works of these authors. Nearly about the

* *Meditations*, p. 256.

same time, P. Holstrom, A. Wahlstrom, S. Sinus, Elis. Hyphoff, A. J. Molander, B. Westtersten, C. Mesterton, O. Rönigk, H. Möller, and A. Axelson, severally, in their respective philosophical publications, treated of the leading principles of logical science, chiefly through the medium of the theories of Descartes and Leibnitz.

The logical speculations of Locke were well known in Sweden in the middle of this century, and highly prized by some philosophers of note. Among the number was M. Van Strokovich, who published an epitome of the Englishman's work, with notes and illustrations. The Swedish author's treatise, *Logica, eller Stutkonsten*, &c. (1721), gave rise to a controversy on some of the leading logical tenets of Locke's book, which, for a time, was carried on with great zeal and some bitterness among the logicians of Stockholm. But the fullest and most complete account of Locke's *On the Conduct of the Understanding*, is from the pen of G. P. Leopold, whose work was published at the close of the last century, and became exceedingly popular among general readers of logical treatises.

P. Kolmark made an amalgamation of the respective theories of Locke and Wolff, in reference to logical science. His work was favourably received, and in some colleges made a text-book.

The intelligence of the publication of Kant's logical views was transmitted to Sweden at an early period, and created a lively interest among the logicians of that country. P. R. Christiernin attempted to unite the *Critique of Pure Reason* with some of the leading tenets of Locke. His work was published at Upsal in 1794, and considered a valuable treatise on the

abstract principles of logic. Bjurbaeck and J. Gottmark were also distinguished writers on the same subject. Magnus Blix, Dan. Böethius, and C. A. Ehrensvand, discussed logic in conjunction with mental philosophy, and their several works were highly esteemed by the learned of their own country, but beyond which they were little known.

As far as I have been able to penetrate into the subject, it appears that the general mode of teaching logical science in the universities of Sweden, during this period of history, was a combination of the leading principles of mental philosophy with the ordinary forms of the syllogistic logic. This mode of introducing topics of intellectual speculation, with a view of illustrating the nature of reasoning in general, became prevalent in the early portion of last century; but towards its close there was little or no notice taken of the logical peculiarities and bearings of the Kantian system in any of the ordinary seminaries of education in this country. The common summaries and text-books on logic, which have fallen in my way, present here, as in most other places, a great degree of similarity both as to matter and formal arrangement.

Denmark and Norway have paid considerable attention to logical studies in their several academical institutions. The systems usually adopted here during the last century, bore a great resemblance to those taught in the Swedish universities during the same period of time. About the middle of the last century logic began to be discussed in Denmark and Norway, in conjunction with a portion of mental philosophy—such, for example, as the nature of our simple and compound

ideas, the laws of memory, the power of abstraction, and the like. Then followed the nature or kinds of propositions, the forms of the syllogism, and a few closing observations on method. This was the uniform routine of logical instruction, in these two countries, during the period of history of which we are now treating.

Apart, however, from mere academical tuition, there were several philosophers in these countries who took a more comprehensive view of the reasoning powers of man, and who have recorded their several opinions in respectable philosophical treatises. Rothe Tyge discussed logic through the medium of theology. He embraced the opinions of Malebranche, and defended them with great zeal and ability. Christian Bartholm followed in his footsteps, but gave a more popular turn to his discussions and investigations. Chr. Horneman was a distinguished professor in the University of Copenhagen, and illustrated the logical system of scientific truth common to the views of Kant and Locke combined. Niels Treschow is one of the ablest Danish logicians of this period. He entered very fully into the systems of Locke and Hume, and into the logical foundations of what is meant by existence, eternity, space, time, intelligence, and the like. On the logic of Bacon, and the categories of the principal German writers, he displays great skill and erudition.

The logical systems commonly taught in the colleges and universities scattered over Hungary, Bohemia, Moravia, and Galacia, were, as far as I have been able to collect any positive information on the subject,

chiefly compounded of the old scholastic views. Towards the latter end of the last century, there were here and there new doctrines from the German school introduced into logical discussions; but these were not sufficient to force any change in the established mode of treating the art of reasoning in these several countries.

Logical studies formed a general and necessary portion of academical education in Poland during the last century. They were founded on the Aristotelian theory; but, towards the latter part of the century, there were several novel ingredients incorporated with them, chiefly from the domain of German philosophy.

Logic was introduced into the Russian empire in the middle of the sixteenth century, and was cultivated in the purely Aristotelian fashion till the commencement of the last century. A change then took place, chiefly through the instrumentality of Nikodim Sellj, a Russian monk, who had entered very profoundly, not only into the scholastic logic, but into all those abstract questions which many of the middle age logicians coupled with it. In 1756, Nikolaj Popofskj gave public lectures on logic at the University of Moscow, which he popularized to a great extent—giving at full length many of the most valuable portions of Locke on the government of the mind. After the death of this professor, Michael Katschenofskj succeeded him, and imparted additional life to logical studies at the same university. He was intimately acquainted with the speculations of Descartes, Leibnitz,

Malebranche, Locke, and Wolff. A still wider logical range of inquiry was instituted by Wassilj Sergejewitch Podschiwaloff, who became professor of logic and polite literature. In addition to the German and English systems of logical speculation, he introduced some of the doctrines of the French school.

CHAPTER XIX.

A FEW BRIEF REMARKS ON THE EASTERN AND INDIAN LOGIC.

I CONFESS it is chiefly from a compliance with recent custom, that I here offer these few remarks on the systems of logic known in the Eastern nations and in India. I have no doubt whatever of the existence of such logical forms as have of late years been brought prominently forward among European *literati*; but I have a great doubt of such logical views becoming of any value whatever in the cause of general knowledge or science, or of ever having any fair claim to be admitted as an integral part of the Catholic philosophy of mankind. It is absurd to conceive that a logic can be of any value from a people who have not a single sound philosophical principle, nor any intellectual power whatever to work out a problem connected with human nature, in a manner that is at all rational or intelligent. Reasoning, at least in the higher forms of it among such semi-barbarous nations, must be at its lowest ebb; nor does there seem to be any intellectual stamina, in such races of men, to impart to it more vigour and rationality.

Gotama is considered the founder of the logic of

India. In his system there are six "Predicaments" or "Objects of Proof,"—namely, Substance, Quality, Action, Community, Particularity, and Relation. To this some of the Indian sages add another,—Privation, or Negation.

The intellect is the *substratum* of eight different qualities,—namely, Number, Quantity, Individuality, Conjunction, Disjunction, Priority, Subsequence, and Faculty.

Many of these categories relate, however, more to systems of cosmogony than to logic proper. It is requisite, therefore, in order to give any thing like an adequate conception of this science as interpreted in India, that we should enter a little more fully into particulars.

In the discovery and promulgation of truth, on whatever subject, there must be a method; and this method embraces the *enunciation* or *proposition*, which is the name of any object, or a proper name; then follows the *definition*, which fixes or determines the qualities or attributes of the subject; and then, lastly, there comes the *investigation*, whose office it is to discuss the nature and application of this definition.

Connected with this logical method, Gotama enumerates sixteen dialectical categories:—1. Proof; 2. The object or matter of proof; 3. Doubt; 4. Motive; 5. Example; 6. The truth demonstrated; 7. The regular argument; 8. Reduction to the absurd; 9. Acquisition of certainty; 10. Debates; 11. Conference or interlocution; 12. Controversy; 13. Fallacious assertion; 14. Fraud and unfair controversy; 15. Futile reply; and, 16. Defect in judgment.

The sixteen categories have, however, been compressed, by some commentators, into three general categories,—namely, 1st, That which treats of proof; 2d, Whatever relates to the object of proofs; and the 3d Refers to what is termed the organization of proofs.

First Category—Principle of Proof.—The entire principles which constitute proof may be divided into four kinds,—1st, *Perception*. 2d, *Induction*, which is of three sorts: consequent when it ascends from effect to cause; antecedent when it descends from cause to effect; and analogous when based on resemblances or affinities. 3d, *Comparison*. And, 4th, *Affirmation*, which embraces revelation and tradition.

Second Category—Objects of Proof.—The objects of proof are,—1st, The soul, which is the seat of eternal knowledge or intelligence. 2d, The human body, the seat of this soul, considered both in its active and passive state; under the first relation it is the fountain or source of exertion; under the second it is the seat of enjoyment. 3d, The organs of sensation: these relate to the various material elements,—as earth, water, light, air, and the ethereal element which produces hearing. 4th, The objects of the senses constitute an important medium of proof: these are derived from the above enumerated primary elements.

The other objects of proof are,—the *intelligence*, which embraces notions and recollections; the *manas*, considered as the instrument of intelligence; *activity* or determination, from which vice and virtue proceed; *transmigration*, or the future condition of the soul; *retribution*, *punishment*; and lastly, *salvation* or deliverance.

Third Category—The Organization of Proofs.—This general class of proofs is divided into three heads: the first embraces legitimate and conclusive proofs; the second relates to the discussion which brings proofs into play; and the third refers to false proofs or sophisms.

Legitimate or conclusive proofs are those in which doubt is expressed by the position of the question; the motive or reason; then the example, which is a point upon which, in every controversy, the parties are fully agreed.

Demonstrative truth is that which is recognised either universally or individually; either hypothetically or by concession. The regular and complete argument is the syllogism, which is composed of *five* members,—the proposition, the reason, the example, the application, and the conclusion.

This is the form of the Hindu syllogism :—

1. The mountain is burning ;
2. For it smokes.
3. That which smokes burns, as the kitchen-fire.
4. Accordingly the mountain smokes ;
5. Therefore it burns.

We have also, in connexion with the organization of proofs, the *Reductio ad Absurdum*, which consists in deducing from (false) premises conclusions manifestly inadmissible, which compels the mind to renounce the premises. Then, again, we have the acquisition of certainty, which is the result of proof. *Debate* is that which consists of two persons with contrary principles, each endeavouring to subvert his antagonist's position.

Interlocution is a conference between two persons, in order to arrive at truth. *Disputation* is defined to be that state when one of the controversialists seeks to overthrow the opinion of his adversary without intending to put forward his own individual opinion or system. *False proofs or sophisms* are fallacious assertions, having the semblance of reason without the reality.

Thus we see that the categories of Gotama are in part a classification of the chief objects of philosophical investigation, and the other part a development of the scientific methods and processes of investigation itself. Both comprehend the subjective and objective elements of human knowledge.

In comparing the European syllogism with the Hindu logic, it has been observed, that the three last propositions correspond exactly to our syllogism, with this single difference—that the first, or major term, contains invariably an *example*. Under this designation the logicians of India comprehend either a sensible object or some particular point admitted, or supposed to be admitted, by those to whom the argument is submitted, and which in this relation becomes a positive fact. By means of the example, as an integrant part of the syllogism, and inherent in the major premiss, the general proposition is not presented, except as realized in a positive fact, and thus abstraction assumes a body and form.

When the five members of the Hindu syllogism is considered, we shall readily perceive that it is in reality formed of two syllogisms, constructed in an inverse order. Setting out from the third, which is the major

proposition, and which is placed in the centre, we find successfully the minor and the conclusion, whether we go backward to the two anterior, or forward to the two posterior propositions. This construction of the syllogism, it is contended, is in strict harmony with the constitution of the human mind, which alternately proceeds by analysis and synthesis. The first syllogism, which commences with particular propositions in order to arrive at a general truth, corresponds to the analytical process of reasoning; while the second, which begins with the general in order to arrive at the particular propositions, furnishes an example of the synthetic process. However ingenious this may appear, still, it is argued, the Indian syllogism is vastly more cumbersome and unwieldy than the European, and less susceptible of ready and expert application.

The followers of Jina, an ancient and celebrated sect in India, hold that there are five great principles or causes which unite in the production of all events. These are,—Time, Nature, Fate, or Necessity, Works, or the principle of Retributive Justice, and Mental Effort, or Perseverance.

The same sect hold likewise that there are six categories,—namely, Motion, Rest, Vacuum, Time, Life, and Matter.

The intellectual or inward soul of man is, according to the doctrine of the Persians, composed of five separate parts, each having peculiar offices or duties to perform. These are,—

1. The *Feroher*, or principle of sensation.
2. The *Boe*, or principle of intelligence.

3. The *Rouan*, or the principle of practical judgment.
4. The *Akko*, or principle of conscience.
5. The *Jan*, or principle of animal life.*

* For further information on the subject of this chapter, I beg to refer to *The Transactions of the Royal Asiatic Society*, vol. i. ; *The Asiatic Researches of Calcutta*, vol. ix. ; to Mr Fraser's account of Persia in the *Edinburgh Cabinet Library* ; and to the *History of Philosophy* adopted by the university of France.

CHAPTER XX.

ON THE NATURE AND CHARACTER OF LOGICAL LITERATURE
IN THE SEVERAL NATIONS OF THE CONTINENT OF EUROPE,
FROM THE YEAR 1800 TILL THE PRESENT DAY.

WITHIN the last fifty years, and particularly within the latter part of this period, the study of logic has been greatly on the increase, both in collegiate institutions, as well as among the philosophic portion of the reading community. Able works on the science have made their appearance in every country ; and very opposite and conflicting discussions, as to both its abstract and practical utility, have marked the character of the generality of these productions.

The distance over which we have to travel, and the scanty portion of space left us, must be our apology for tripping somewhat hastily over the ground in this chapter. As there must be limits to all things in this world, so must there likewise be limits to a historical sketch of logic. As a general principle, it is desirable both to know and to communicate all things ; though, when this principle comes to be applied, it is often found to be neither very edifying nor practicable.

Commencing with Germany, it may be observed that

Kant's theory was the great starting-point, either in the way of supporting, modifying, or opposing, to most of the logical treatises of the country during this present half century. This theory obtained such a firm hold of the philosophic mind of the nation during the first twenty years of its history, that the philosophers and logicians of Germany seemed spellbound, and unable to set a single foot beyond the prescribed circle of the *Critique of Pure Reason*. The entire mass of logical speculation of modern times, rests upon an ingenious system of ringing the changes on the leading ideas or principles involved in Kant's views, and those of his immediate followers and critics.

Fred. Bouterweck viewed the principles of logical science through a spiritual medium. Self or consciousness is the basis of reasoning in all its forms and aspects. In the apodictic logic, reason examines and interrogates itself. Every train of reasoning, of whatever length it may be, is of a purely subjective character. The reason is a living, active, and creative principle.

Krug taught logic at Wittenberg, Frankfort, Königsberg, and Leipsic, and published his work on the science in 1806. In his exposition of the nature of truth, he maintains that every proposition rests upon intuitive certainty. Human nature and the understanding are our boundaries; consequently we can only seek for proof within this prescribed range. The principle of absolute reality is the *principium essendi*, and the ideal principle is the *principium cognoscendi*: the first possesses the attribute of perfect unity, and the second is either material or formal. Mathematical evidence, Krug conceives, has a decided superiority in point of

certitude to the evidence from human nature. The latter never rises above the degree of probability.

J. F. Fries was an influential and able writer on logic. Being dissatisfied with Kant's system, he published *A New Critique of Pure Reason*. His theory of the logical elements is based on intuitional knowledge, faith in testimony, and the notions of a Deity. "Reason is the law of truth, and embraces an immediate knowledge, purged of all alloy of doubt and error. It reposes on the inward convictions of the existence of a Deity; the supreme good; the elements of all beauty, virtue, truth, right, and justice." Fred. Von Calker supported Kant's leading views in his logical philosophy. Truth consists in the harmony of a knowledge of the objective with a notion of the subjective; and science is the agreement of consciousness with perception and intuition—an agreement involved in our belief of reality. Science requires proofs; and those are derived from demonstration and deduction, acquired through the means of pure and empirical intuition. Bardili founded his logic on purely ontological principles. *Being* is the basis of all human knowledge and reasoning. The Deity is the first principle of all reality, of all thought, of all truth, science, and being.

Fichte viewed all logical results through the medium of a lofty transcendentalism. His several treatises contain many profound and singular doctrines relative to truth and the general operations of reasoning; but they are treated of in such a manner as to bring them more within the province of mental philosophy than logic.

Schelling, in his system of philosophy, did not treat

of logic in a regular and formal manner, but merely touched upon the principles of scientific certainty in some particular directions. His categories of all human knowledge will afford a glimpse of his leading views on logical arrangement and evidence.

1. The Absolute, the whole in its primary form (God), manifests himself in,

2. Nature (the Absolute, according to its secondary forms).

It then produces itself in two relative orders, viz.—

THE REAL.

THE IDEAL.

Under the following powers :—

Weight—Matter.

Light—Movement.

Organization—Life.

Truth—Science.

Goodness—Religion.

Beauty—Art.

Above, as reflected forms of the universe, place themselves,—

MAN, the Microcosm.

THE STATE.

The System of the World (the External Universe),
—History.

Klein follows Schelling in his logical views. He maintains that all formal developments of logical rules are merely general expressions of metaphysical principles. Logic he divides into two parts; the analytical and dialectical. All the higher manifestations of the reasoning faculty rest upon intuitive principles. Un-

less these be granted, such a science as logic is impossible. F. Ant. Nuesslein founded all sound and practical logical tuition on psychology. According to his idea, no logical hypothesis is intelligible unless it rests on a notion of Deity. Wagner, in his *Logik*, views the science of reasoning in a different light from any of his contemporaries. His aim is to give a purely mathematical form to all logical rules, much after the same fashion as Lully and Bruno. Baader and Henry Steffens are both somewhat mystical in their notions as to the nature and application of philosophical logic.

Hegel, in his *Wissenschaft der Logik* (1816), denies that logic is merely expressive of the *forms* of thought: it constitutes its very essence and reality. Logic displays three different states or conditions. We simply consider, and look at a thing. We then separate that thing from others, for nothing can exist in absolute *unity*; it must have two aspects, or a positive and a negative side; and then out of these arises a certain *relation*, which alone constitutes truth, reality, being, the absolute. There is thought in its immediate existence: thought is communicated, and thought is forming a full and complete conception of its ownself. The formal arrangement of Hegel's Logic runs thus:—

1. *Thought in its immediate Existence or Being.*

QUALITY: comprehends Being (Seyn), Existence (Daseyn), Independent Existence (Für-sichseyn).

QUANTITY: Pure Quantity (Reine Quantitat), Divisible Quantity (Quantum), and Degree (Grad.)

MEASURE (Maas): The union of Quality and Quantity.

2. *Thought or Mind as communicated.*

GROUND OF EXISTENCE: Pure Notions of Essence, Essential Existence (Existenz), Thing (Ding).

PHENOMENON: Phenomenal World (Welt der Erscheinung), Matter and Form (Inhalt und Form), Relation (Verhältniss).

REALITY: *embracing the union of the ground of Existence and Phenomenon.*—Relation of Substance, Relation of Cause and Effect, Action and Reaction.

3. *Thought on Mind as forming a Conception of Itself.*

SUBJECTIVE NOTION: Notion as such (Begriff als solches), Judgment (Urtheil), Inference (Schluss).

OBJECTS: Mechanical Powers (Mechanismus), Chemical Powers (Chemismus), Design (Teleologie).

IDEA: Life (Leben), Intelligence (Erkennen), Absolute (Absolute).

John Fred. Herbert was an able logician, and expounded the principles of the science through the views of his mental philosophy, which was, on the whole, of an enlightened and eclectic character. Eskharshausen maintained that there were seven categories of the understanding and judgment; namely,—1st, That which recognises external objects; 2d, That which enables us to pay attention to them; 3d, That which reflects upon them; 4th, That which confers variety and multiplicity to our perceptions; 5th, That which passes a judgment on any thing; 6th, That which discovers the relations among divers things; and, 7th, That which unites into one general conception the truth of many individual things. Krausc, in his *Logik*, makes all logical and

scientific truth rest on two ground pillars—*Organized Knowledge*, embracing Unity, Infinity, Absolute; and *Super-Essential Knowledge*, which includes—1st, *Sensible Knowledge*—External, Internal; 2d, *Intellectual Knowledge*—Conception (the common and abstract), Super-Sensible (the universal and necessary).

H. C. W. Sigwart defines logic, in his work on the science, to be that which unfolds the laws of thought. Scientifically considered, his work embraces the entire theory of human knowledge, and has the whole framework of the mind for its basis. *Practical logic*, he says, is that which influences our thoughts, so as to enable us to form mental prepositions and conclusions. Rixner considers logic as a universal science under the relation of quantity; and views it under two aspects—as *true science* and *apparent science*. J. Hermann Fichte founds all human knowledge on four phases of consciousness. The third phase gives rise to abstract ideas or conceptions, out of which logic takes its rise, embracing conception, judgment, reasoning, inference, &c.

Such is the general outline of the logical philosophy of Germany. It is a compound of many things; and yet there is a unity of character about it, sufficient to sustain its nationality and distinctness from the dialectical speculations and systems of every other people. There is this peculiarity, among many more, about the logical as well as the mental speculations of the country, that they will not bear transplanting to any other region. As a totality, or whole, they are suited to Germany, and Germany is suited to them. And even if any one of the leading principles of their logical theories were detached from the aggregate mass, and

engrafted on a French, or English, or Italian stock, it would impart such a grotesque quaintness to the whole, that it would mar and neutralize all scientific and popular plans of instruction. All attempts to mix and blend German logic with any other, have hitherto, in every country, proved utter failures.

With perfect unity, there is likewise great variety in the logical systems of this country. The chief reason of this is, that the professors of logic, as well as professors of every other branch of study, are allowed the most perfect liberty to treat their respective subjects according to their own personal views and opinions, and altogether apart from the prevalent political and ecclesiastical sentiments of the day. Another important circumstance increases this variety of logical systems; namely, the wide field which a logic chair offers to a mind ambitious of fame and distinction. The great mental activity which prevails in all the German universities, arises from the national mind being deprived from playing any great part, either in the grand game of politics or of commerce. The love of distinction is, therefore, driven to open out other channels for its field of operation; and none proves more inviting, both for social honour and government patronage, than a logic chair, filled by a professor who can collect a crowd about him, either from the singularity of his doctrines, or his brilliant manner of developing and illustrating them. Novelty becomes here one of the chief ingredients in a popular and successful logical chair.

Logic is more generally taught in Germany at the present day than in any other country in the world. All matriculated students must undergo an examina-

tion in logic previous to their admission to the universities. The Gymnasias, or public schools of the country, give a regular course of logical tuition to the scholars. Indeed, so generally is the science of logic cultivated, that it has been estimated that there are not ten out of every hundred of the gross amount of students throughout all the universities who have not had logical instructions, more or less full and complete, before they go to college. The extent of the study may, therefore, be in some measure calculated, when we take into account the number of universities, and the number of students who attend them. The following will, I conceive, prove a pretty correct statistical account of the subject :—

The University of Berlin has 2140 students; Bonn 700; Halle 700; Breslau 700; Greifswalde 400; Königsberg 450; Tübingen (Württemberg) 850 (in 1844); Munich (Bavaria) 1330; Leipsic (Saxony) 900; Göttingen (Hanover) 640 (in 1844); Heidelberg (Baden) 698 (in 1844); Jena (Saxe-Weimar) 420; Erlangen (Bavaria) 303; Würzburg (Bavaria) 485; Giessen (Hesse-Darmstadt) 446; Marburgh (Hesse-Cassel) 294; and Freiburg (Baden) 273.

There are the Austrian universities of Vienna, Prague, and Grätz (Styria), which have unitedly 2500 students, but whose constitution is different from the German universities of the West. Then, again, there are the German universities of Strasburg, Rostock (Mecklenburg); Keil (Holstein); and those of the Swiss towns of Basle, Berne, Freiburg, and Zurich, which number upwards of 4000 students,—making a grand total of nearly *fourteen thousand*.

Turning now to France, we perceive, during the last fifty years, an increased interest felt in reference to logical science, both in its philosophical and educational character and relations. More elevated views have likewise been taken of it; so that it is not now the same mechanical, material, or instinctive thing, which most of the French logicians made it during the last century. The principal cause of this favourable change is the more refined and spiritual tone which has been imparted, in this country of late years, to mental philosophy generally. Logical science, from its intimate relation to metaphysical inquiries, infallibly partakes of their fortunes, whether they be for good or for ill.

During the better half of this period, France presents logical studies under a varied and unsettled aspect. This was common to other countries as well as herself. The philosophical opinions of a nation are but slowly changed or modified. The logical notions of the preceding century had sunk deeply into the minds of the learned, and had tainted the ordinary channels of education at their fountain-heads. In attempting to return to a healthier condition of thinking, a mental struggle was inevitable. This manifested itself in various ways, and with a variable intensity at different times; and the spirit of reformation had to fight its way, step by step. During this state of trial and probation, we can recognise, with sufficient distinctness, four orders of logical philosophers:—those who took the pure sensualism of the last century; those who viewed logical science through the medium of theological doctrines; those who favoured a logical eclecticism; and a fourth, who were imbued with the fanatical and

irrational dogmas of St Simonism. If we cast an eye over the logical productions of France, from the commencement of the present century till 1830, we shall see these rival and struggling classes mapped out very clearly and distinctly. After this period, the contest seemed to lie between the rationalism of Descartes and the *a priori* school of intuition.

Among the most able and distinguished French logicians of the early part of this present century, we may place the name of M. De Gerando. His work, *Des Signes et de l'Art de Penser* (1801), enters very fully into one of the most subtle and important questions connected with logical science,—namely, the relation which verbal signs bear to the mental faculties in a process of reasoning. M. De Gerando considers all questions as to the precise nature and province of logic, when viewed as an educational instrument, must remain involved in darkness, until some progress is made in the solution of this problem. It is impossible for us to enter into this question in a full and regular manner: we must, therefore, refer the reader to M. De Gerando's pages for further information on this interesting though perplexing subject. Suffice it to say, that this learned writer has successfully and clearly pointed out some of the principal errors into which Condillac and his disciples had fallen, relative to the use of language as a medium of thought. A few observations from the author's work must close our remarks on this division of De Gerando's logical labours.

“The same task,” says he, “which must have been executed by those who contributed to the first forma-

tion of a language, and which is executed by every child when he learns to speak it, is repeated over in the mind of every adult when he makes use of his mother tongue: for it is only by the decomposition of his thoughts that he can learn to select the signs which he ought to employ, and to dispose them in a suitable manner. Accordingly, those external actions, which we call *speaking* and *writing*, are always accompanied with a philosophical process of the understanding, unless we content ourselves, as too often happens, with repeating over mechanically what has been said by others. It is in *this* respect the languages, with their forms and rules, conducting (so to speak) those who use them into the path of a regular analysis—tracing out to them, in a well-ordered discourse, the model of a perfect decomposition—may be regarded, *in a certain sense*, as *analytical methods*.” “In asserting that languages may be regarded as analytical methods, I have added the qualifying phrase, *in a certain sense*; for the word *method* cannot be employed here with any exact propriety. Languages furnish the *occasions* and the *means of analysis*—that is to say, they afford us assistance in *following* that method, but they are not the method itself. They resemble signals and finger-posts, placed on a road to enable us to discover our way; and if they help us to analyse, it is because they are themselves the results, and, as it were, the monuments of an analysis which has been previously made: nor do they contribute to keep us in the right path, but in proportion to the degree of judgment with which that analysis has been conducted.”*

* Des Signes, pp. 138, 139.

The formation of a philosophical logic—similar in its character and intended offices as that contemplated by the late Dugald Stewart, of which we have previously given some account—was a favourite speculation of M. De Gerando. He expected great things from such an extension of logical science. One of the fundamental errors connected with general education, he contended, was, that the reasoning power was not directed in a healthy and vigorous manner to the consolidation of knowledge in general. Truth was too much addressed to the memory, and too little to the understanding. Men commonly consider the memory in the light of an inexhaustible magazine, from which a plentiful stock of information may be obtained whenever required; but the French logician conceives this is but one part, and comparatively an insignificant part too, of a really sound and philosophical education. The most important thing is to acquire the habit of employing our knowledge to some useful end or purpose. Unless this be steadily kept in view, acquired information is but of little utility.

M. Noel's work, *Logique de Condillac* (1802), is a sort of running commentary on the system of Condillac. It presents nothing that is new or interesting. M. Mongin throws a little novelty into his *Philosophie Élémentaire* (1803), by merging all logic into universal grammar. He considers the entire force of mental propositions to lie in the modes of disposing of the respective terms in which they are couched. This doctrine had but a very limited number of admirers in France. Daube (1805) followed in nearly the same steps, but with no more success. His system is now

almost entirely forgotten. J. S. Flotte, in his *Logique* (1805), defines the science to be “a collection of observations made by philosophers, on the mode of conducting the faculties of the mind, so as to avoid error and arrive at truth.”

The philosophical writings of Lancelin, Keratry, Laromiguière, Royer-Collard, and Maine de Biran, tended greatly to direct men's minds to the higher principles of logical science, and to fix it upon a more spiritual and refined basis. It was chiefly through the labours of Royer-Collard that the logical opinions of the *common sense* school were made fully known to the philosophic mind of France. He gathered around him numerous followers, to whom he imparted his zeal, his method, and his principles.

Whilst this change was going on among professed philosophers and logicians, the theologians of France were not idle. They viewed the science, which had for its aim the detection of error and the discovery of truth, in their own way and fashion. They felt, and enlarged upon, the insufficiency of mere abstract philosophy to solve all the problems connected with a process of reasoning, and the nature and character of truth. They fell back, therefore, on those *a priori* notions of spiritual knowledge which form such a conspicuous element in the human understanding, and which are so strikingly developed, illustrated, and enforced, in the system of revelation. They attempted to form, in fact, a complete theory of scientific truth—a regular philosophical *organon*—by the aid of such intuitive conceptions, joined to the abstract character of a revelation itself, and the positive authority of the

Church. These respective historical and mental elements were amalgamated and combined with singular adroitness and ability, and brought to bear on the grand object in view, with a power of reasoning, and a copiousness and elegance of illustration, never surpassed in any similar intellectual enterprise. We can do nothing more, however, than barely draw attention to the several writings of Le Maistre, Laménais, Bonald, D'Eskstein, Ballanche, Battain, and the philosophical disquisitions published from time to time in the *Université Catholique*. Here a great mass of discussion will be found, bearing on the various principles of logical philosophy, and throwing no inconsiderable degree of light upon the nature of language as an instrument of reasoning, on the standard of truth, on the sources of erroneous judgments, and on those various powers of the mind, called into requisition in every process of argumentation having for its direct aim the establishment of the vital truths which engross the attention of general humanity.

J. P. Brissot's work, *De la Vérité, ou Méditations sur les moyens de parvenir à la Vérité dans toutes les Connaissances Humaines*, is a species of logic based on the common sense view of the phenomena of reasoning. It is decidedly practical in its aim and matter, and contains many highly useful statements and observations. F. Perron attempts to give a new scheme of logic in his *Essai d'une Nouvelle Théorie sur les Idées Fondamentales*. He affirms that all previous logical systems have been erroneous from the Grecian downwards, and have been founded on perfectly gratuitous and arbitrary principles. Writers have assumed certain logical conditions as

subsisting among the relations of our fundamental ideas, and have clothed them with the attributes of necessity, universality, immutability, and the like. This is a radical error. These logical conditions do not possess a more *a priori* origin than any thing else belonging to the understanding. M. Perron also maintains that the categories of the intellect have been strangely misunderstood by logicians in general.

Man, according to this writer, has but one thinking faculty; this is, however, of a very comprehensive character. What we perceive of external objects constitutes their veritable properties or modes of existence. Our knowledge commences with concrete perceptions; and what are usually termed the categories are not certain forms of thought—pure conceptions of the reason—but simply generalizations of individual objects or things. This the author endeavours to demonstrate from considerations drawn from space and time, cause and effect, the finite and the infinite, &c.

In M. Perron's logical system there are nine categories which, he conceives, embrace every relation subsisting among all things of which the mind can be conversant. These are—

- | | | |
|-------------------------|-----|------------------------|
| 1. If they are? . | . | Category of Existence. |
| 2. What are they? . | ... | Essence. |
| 3. How are they? . | ... | Mode. |
| 4. By What? . | ... | Causality. |
| 5. Why? . | ... | End. |
| 6. Where? . | ... | Space. |
| 7. When? . | ... | Time. |
| 8. How many? . | ... | Number. |
| 9. In what relations? . | ... | Relation. |

M. Delarivière, in his *Logique Classique* (1829), says that logic is the science of *internal* and *external* discourse—of which rhetoric and general grammar form a part. M. Hauchecorne founds logic on a knowledge of the mental constitution. It is both natural and artificial; and is that science or art which guides the understanding in all the affairs of life. Logic, according to M. Gentz, is the entire art of thinking, or that which governs the mind in the search and promulgation of truth.

A portion of the general philosophy of Victor Cousin (1831) has a direct and important bearing on logical science. His philosophical method rests on consciousness; *observation* of facts, and *experiment* and *reasoning* in dealing with them, constitute the foundation of all human knowledge. M. Cousin maintains that Descartes and Locke developed the true scientific method of philosophizing, though their respective speculations have been often misunderstood and misrepresented. Logic proper is based on psychology: it can have no other basis. To place it, with the majority of German logicians, on ontology, is to launch at once into every thing theoretical and mystical. Consciousness has three faculties,—sensibility, activity, and reason; to the last, logic especially belongs. This reason is not an individual thing: it is impersonal; it is governed by necessary and absolute conceptions. Its analysis gives us three classes of these conceptions,—1st, The idea of *infinite*, variously expressed by the terms unity, absolute cause, the absolute, &c.; 2d, The idea of the *finite*, expressed likewise by the words plurality, phenomenon, relative cause, the conditioned, the limited, &c.; and

3d, The idea of *relation* between what is infinite and *finite*. Those three elements are the result of the synthesis of thought, and constitute the unity of reason.

The convictions of this reason are not particular or personal convictions, but universal truths—truths for all intelligences—truths that are the same to the Divine mind as to our own. They are truths in themselves—absolute, unalterable by any power of will.

The absolute laws of thought may be reduced to two categories,—the law of causality and the law of substance. These are two primary principles, from which all logical deductions proceed. They are contemporaneous unity in consciousness. The law of substance is *logically* the first in order of time, and that of causality the second.

Logic is defined by Cousin to be *the legitimate passage from the idea to being*—that is, the law of our existence, which authorizes or commands us to say, *this is; it exists*.

Logic may be considered under two aspects,—*natural* and *reflective*. The first rests on facts, and is purely affirmative in its character; the second on reflective affirmation—that is, a necessity of denying or affirming.

M. Damiron, in his *Cours de Philosophie* (1836), devotes an entire volume to logic, which he discusses on a comprehensive plan, and in a liberal and enlightened spirit. He commences his work by making some preliminary observations on the nature and province of logic; then on the character of our judgments and the criterium of truth; on perception, and its laws and rules; on *a posteriori* generalizations; on reasoning in

general ; of the syllogism ; of analogy and probability ; on language considered in relation to thought ; on our sensibility connected with the rules of judgment ; on habit ; on the sources of error ; and on the exposition of method, relative to a proper history of philosophy.

There are several later writers on logic in France whose works will repay perusal, but which we cannot notice at any length. The principal of these are,—Charma, Dufour, Larguet, Perrard, and Javari.

The logical disquisitions of Belgium and Holland have been influenced to some extent, since the commencement of the present century, by the prevailing systems of mental philosophy both in Germany and France.

In Holland, however, the change is less perceptible than in Belgium. Among the Dutch philosophers the logic of Wytttenbach has been long in general use, and highly esteemed. Paul Van Hermert introduced the logical principles of Kant into this country during the latter part of the last and the beginning of the present century. We shall find many of the leading views of the German logician discussed with great ability in Van Hermert's *Elements of the Philosophy of Kant*. The Dutch writer maintains that there are four categories on which all scientific knowledge rests,—namely, the general, the special, the true, and the necessary.

M. Aitzema, in 1821, translated into the national language the logical system of M. Snell, which is founded on the principles of Kant. In 1828, the *Society of Public Good* published lessons on logic for the use of young men who had quitted school. This

is a short and popular book, the author of which was M. Alex. Bake, rector of the Latin school of Leeuwarden.

M. Nieuwenhuis is one of the most able philosophical logicians in Holland. His *Commentary* on the system of Descartes (1828), and his *Initia Philosophiæ Theoreticæ* (1833), shew an intimate acquaintance both with the history and philosophy of logic. And the same remarks are applicable to the writings of Van Heusde*—a logician whose reputation has extended far beyond the limits of his own country. In his *Initia* he treats of the dialectics of Plato; and in his *Socratic School* we have a learned dissertation on the nature of scientific truth. The author asks, What is logic? The answer he gives is, that it is the art of communicating knowledge according to the principles of sound reason. Logic is by no means to be confounded with the dialectics of the schools.

There have been two parties who have cultivated logical science in Belgium,—one connecting it with a system of rationalistic philosophy; and the other discussing it, both in its scientific principles and formal arrangements, with an especial reference to certain theological purposes and doctrines. There is not, however, such a wide difference between the logical treatises of these two parties as one might be led at first sight to imagine. In their leading principles and forms there is a great resemblance among them all.

We have De Nieuport's *Essai sur la Théorie du Raisonnement* prefixed to his edition of Condillac's *Logic*, in which he discusses several of the leading

* "De Socratische School of Wijsgeerte, voor de Negentiende Eeuw," Utrecht, 1834. "Initia Philosophiæ Platoniciæ," 1831.

principles of the science of reasoning. Though his opinions are attached to the French philosopher's work, yet he differs from him on many essential points in reference to logic. Nieuport makes reasoning a more spiritual and complex operation than Condillac does. Professor Liebaert filled the logic chair at the university of Louvain during the entire period that the country was under the government of France. The system of instruction he pursued is laid down in his *Tractatus de Logica* (1818), which is divided into two parts,—the one lays down the general laws of thought; and the second treats of the various kinds of truth, and the various degrees of certainty which belong to each kind. About the same period we have *Eléments de Logique* (1817), from the pen of a clergyman—a work which has for its especial object to direct and strengthen the minds of youth before they enter upon the study of the higher branches of philosophy.

We have a full and systematic account of the philosophy of logic in M. Ign. Deuzinger's two works, *Prima Lineamenta Logices* (1818), and *Compendium Logices* (1823). These are both treatises of great merit. Logical science in Belgium owes at this period great obligations to the several writings of M. Van Meenen, who combated with zeal and talent the theory of logic propounded by Condillac and his partisans, which had found favour in that country among some influential cultivators of speculative philosophy. Jean Herman Janssens, in his *Logique*, views the science of reasoning in connexion with those principles of philosophy cultivated by the Catholic Church. He was professor at the university of Louvain. In the *Exposé des Facultés*,

des Lois, et des Operations de l'Ame (1838) of M. Becart, we have a very familiar and useful dissertation on logic.

The *Principes de Logique* (1833) of Baron Reiffenberg is an able and instructive work. He looks at logic through the medium of philosophical rationalism. He defines logic to be the science of those laws to which we submit our reason in the search after truth. It is divided into four portions,—namely, the Idea, Judgment, Reasoning, and Method. M. Gibon, in his *Cours de Philosophie* (1842), maintains that all the conceptions of the human understanding may be classed under three heads,—Ontology, Psychology, and Logic. We have two works proceeding from the university of Louvain, — namely, E. Tandel's *Cours de Logique* (1841), and *Logicæ seu Philosophiæ Rationalis Elementa* of President Ubaghs. The last is a most profound and able work.

From the political connexion which subsisted between France and Italy, from the commencement of the present century to the end of the general war, there necessarily arose a corresponding philosophical intimacy between the two countries. And this was manifested in reference to logical literature, as well as in many other branches of science. Most of the prevailing systems of mental philosophy current in France in modern times, have now found their way, with some little interruptions in certain localities, to most of the Italian states, and form a certain portion of the current literature of the day in the several universities and seats of learning in the kingdom.

But foreign opinions have not as yet effected any

great change in modes of discussing logical science in Italy. In most of the Italian works on the subject, the writers discuss the science from a religious point of view. There is less latitude of philosophical inquiry on the vital principles of the art of reasoning observable here, than in England, France, or Germany. Nearly all the regular text-books in common use in colleges are of a decidedly scholastic and formal stamp,—seldom venturing beyond the rules of syllogism, and a few scattered remarks on the nature of propositions, the sources of error, &c. But out of the direct range and authority of the colleges, we find treatises on logic of a more comprehensive and scientific character; but even here the influence and power of the Church are brought to bear upon the current investigations on the subject, and to impart to them a specific form and complexion.

Cardinal Gerdil, Tamasia, Lallebasque, and G. Grones, were not strictly logical writers; but in their respective treatises on mental philosophy, there are many of the first principles of logic discussed in an able and erudite manner. Vincenzo Bini, in his *Corso Elementario di Lezioni Logico-Metafisico-Morali* (1818), develops the principles of logic, and shews their dependence upon mental and moral science. B. Poli follows nearly in the same path, in his *Corso di Filosofia* (1828), only he enters more fully and systematically into the nature of the human mind. The second volume is devoted to logic. It is treated in a purely elementary manner—the author having very fully discussed the nature of the reasoning faculty in the first volume of his treatise. Gaetano Ventura enters profoundly into

the science of method. In his *De Methodo Philosophandi* (1828), he shews that *method* in logic presupposes a previous exercise of our faculties, and that a certain stock of general information must be obtained before it can be put in operation. This, Ventura affirms, is implied by every logician when he speaks of method. We must know various kinds of truths before we can discourse upon their connexions and relations, or take any step in arranging them in such a manner as to carry conviction to the minds of others. All logical methods proceed on the principle of analysis. The mind looks at an entire system, or a large assemblage of general principles, and then seems to set about the work of analysis or separation with a view of realizing one general idea, which is known only to itself, and which is often obtained by a mental process, which entirely eludes the most searching efforts of consciousness. Every thing must be taken to pieces; every corner and crevice of the system must be examined, before the several parts can be put together and adjusted agreeably to the scientific idea which we have in our own minds, and which we set out in our inquiries to establish and realize. These are the leading steps of the mental process in every philosophical method.*

The *Esercizio Logico* (1824) of Sig. Cuoco is a plain and familiar work, and has been well spoken of by Italian critics. G. D. Romagnosi was one of the ablest of modern Italian writers in logic. His philosophical works are published in nineteen volumes. He differed from the general tenets held by several French logicians; especially those of Cousin and Damiron. On the

* *De Methodo*, § 6. Edit. Venice, 1835.

subject of logic, in his twelfth volume, many profound and just remarks are to be found on the operations of the mind: more particularly in the second book on *invention*. He shews the intimate connexion which subsists between this faculty and that of attention, and how the concentration of the latter power aids the mind in its creative energies. In the third and fourth books, on judgment and reasoning, the author endeavours to prove that, though these two powers are nearly allied to each other, yet there is sufficient ground for a logical distinction between them.

The abstract foundation of all logical truth the author develops in his essay, *Vedute Fondimentali sull'Arte Logica*. He considers the phenomena connected with the direct investigation of truth to be one of the most difficult to analyse of any presented to our notice. It is only by the most patient and careful attention to the inward movements of the mind, that we can possibly detect any of those laws which regulate its procedure in abstract reasonings.*

The opinions of Antonio Rosmini, as to the foundation of logical science, have attracted a considerable share of attention, both in Italy and in other continental countries. The account given of the foundations of human knowledge by Condillac, Reid, Hume, Kant, and Stewart, did not appear satisfactory to him; and, in consequence, he was determined to set out in search of a new *organon* for himself. He seized hold of the idea of *Being*, and made it the starting-point of his system. He maintained, in his *Nuovo Saggio* (1830), that this idea was an *innate idea*—a notion, indeed,

* Opera, tom. 12.

which had often been entertained before. But he commenced to split this idea into fragments as it were, and hence arose his confusion and troubles. In the general working out of his theory, he stated matters which gave offence to some leading Catholic philosophers, both in his own country and in France, who censured his doctrines, and represented them as of a decidedly pantheistical character. Our limits will not permit entering into the nature or merits of this controversy; therefore we must refer the reader to the works on the subject. We shall merely give Rosmini's definition of this general idea of *Being*, which he affirms is the real foundation of all science and truth. He says,—1st, This idea is not concrete, but abstract, and the ultimate possible abstraction. 2d, It is not individual or particular, but generic and universal. 3d, It is not personal, but common. 4th, It is not *real*, but *ideal*; not *effective*, but *possible*. 5th, It subsists in itself, and is not a derivation from the resources of the human mind. 6th, It is not determined, but entirely indetermined. 7th, It is not God. 8th, It is not an idea of, or any thing appertaining to, God. And, 9th, It is not the word (verb) of God.*

Pietro Bottura's *Logica* (1833) is a work which enters fully into the general principles of logic. We have here treated of the nature of definition; the grounds of human judgments, which are intuition, experience, and testimony; on the nature of affirmative and negative propositions; and of the several kinds of demonstration which arise from the genera and species of things. In addition to these leading points of his

* Tom. ii. pp. 712, 719, 722, 750.

logic, Bottura points out at some length the errors involved in the logical theories of Condillac, Tracy, and others of the French school. Sig. Fabriano makes logical science rest on one of the great and primary divisions of the mind itself. This idea is developed in his *Prospetto degli Studj Filosofici* (1833).

The *Lezioni di Logica e di Metafisica* (1841) of Baron Pasquale Gallupi is an important Italian work. The part devoted exclusively to logic is in the first volume. He takes a wide range in the treatment of his subject. In the respective works of Tommaseo, Sig. Manio, Salvatore Mancino, and Gioberti, there are important discussions on many of the leading principles of logical science. Count Terenzio Mamiani discusses the nature of method in his *Dell' Ontologia del Metodo* (1841) at considerable length. He makes it rest on five principles,—namely, invention, induction, demonstration, synthesis, and analysis.

Logical speculations in Spain have undergone considerable change within these fifty years. In the first quarter of the present century, several of the French systems of logic found their way into the universities of the country; chiefly with the view, however, to comment and refutation. The leading principles of Bacon, Descartes, and Locke, relative to logic, were discussed in a small work called *Logica* (1815), written by a Father Bostos. It displays a philosophical mind, and a candid and ingenuous spirit. The work points out what the writer conceived were the leading errors of the *Novum Organum*; and then passes on to the consideration of Descartes and Locke, who find more favour in his eyes. The *Elementos de Logica* (1847) of

D. Teodoro de Almeida is a popular treatise, written expressly for the instruction of young persons. It is a sensible work.

We have a volume on logic from the pen of D. Ramon Marti de Eixala, one of the professors in the university of Barcelona, entitled, *Corso di Filosofia Elementar Compriendendo la Theoria de las Ideas, la Gramatica general y la Logica* (1847). The work is divided into three parts—Ontology, Grammar, and Logic. The last division contains a definition of logic; the nature of perception, abstraction, analogy, &c.; the nature of reasoning and judgment; on authority and testimony, and the several kinds of demonstrative proofs; and, finally, on method.

The *Logica* (1850) of Don Jaime Balmes of Barcelona is a work of talent, and displays an enlightened spirit. He thinks the syllogistic logic does not comprehend the entire science: a knowledge of the operations of the mind, and the particular evidence belonging to individual sciences, should be taken into account in every system of logical tuition.

In most of the colleges of Spain the old scholastic logic prevails. It is very rare that we find any new principle introduced into the ordinary text-books used for university purposes.

The state of logical literature in Portugal at the present time, is much upon a par with that of Spain. Some translations of French systems of logic, of the early part of the present century, are to be met with; but most of the treatises on the science for educational purposes are of the ordinary scholastic character. A knowledge of logic is rendered imperative in the pro-

fessions of law and divinity in all the universities of the kingdom.

In Sweden, at the early part of this century, we find B. H. Hoijer prosecuting logical subjects with great zeal and success. He wrote several able works on mental science generally, in which there are many scattered dissertations connected with the philosophy of reasoning. His aphorisms of transcendental logic was published at Upsal in 1812. He founds all operations connected with the especial prosecution of truth, no matter on what science, on the faculties of the mind, particularly those of an intuitive and reflective character. Samuel Grubbe, a professor in the university of Upsal, undertook to develop the intellectual intuition of Schelling, and to apply it to the science of logical method. Grubbe attempted to reduce every thing to one single idea, and maintained the possibility of rearing upon it a complete system of knowledge, both as to mind and matter. He argues that this intellectual intuition, though admitted to be a pure assumption, does not place the speculations of Schelling upon a more insecure foundation than almost every other theory of knowledge is reared upon, however rational and popular it may appear to be. The great problem is, to demonstrate the finite from the infinite; the relative from the absolute; and the particular from the general. This, Grubbe thought he had accomplished by his fuller illustration of this celebrated German theory.

A. Lidbeck approved of the general logical theory of Schelling, and the commentaries upon it by Grubbe; but he likewise thought that an eclectic system, framed

out of the several systems of Wolff, Baumgarten, Sulzer, and Kant, would be a near approximation to the true method of philosophizing. This system he developed, and it proved popular for a time, but soon gave way to other more exciting novelties. Among the number of these, was Geyer's treatise on the *Nature of Truth*. This is conducted much upon the same plan as Dr Beattie's *Essay on Truth*. Geyer connected the discussion as to the distinct nature of truth, and our specific faculties and powers of discerning and communicating it, with the leading principles of theology. He treats of the evidence from the external senses; of mathematical demonstration; of cause and effect; of analogy, testimony, &c.; and shews their several logical dependences upon the leading principles of religion. In 1820, Södensten attempted, and with some success, to frame a system of logic out of the joint views of Wolff and Locke.

C. M. Schoerbing, in attempting to dispense with all empirical sources of scientific evidence, ran into the opposite extreme of spiritual pantheism. He identifies truth and the Deity, thus destroying those notions of identity and personality requisite to purposes of all sound reasoning. In the logical philosophy of Atterbörn and Almquist, two modern writers of great abilities and reputation, some subtile and original views are developed.

In most of the logical works used in the Swedish universities within the last fifty years, there is more metaphysical matter introduced than is observable in similar works in this country published during the last century. The French theories of reasoning seem to

have gained some ground in Sweden, particularly within the last ten or fifteen years.

Henry Steffens, in the early part of this century, made the several logical theories of Germany pretty well known in Denmark and Norway. His writings are of an eclectic character. Fred. C. Sibbern took Hegel for his guide; and in his *Logik als Denklehre*, &c. (1835), attempted to illustrate the system of the German philosophers, but with little success. The mystical views of Sibbern fell into disrepute. Heiberg was somewhat more successful. Though professing himself generally favourable to Hegel's doctrines, yet he gave them a more solid and common-sense direction, in his *Einleitenden Vortrag zum Logischen Cursus* (1840).

There are about 700 students in the University of Copenhagen, and nearly two-thirds of them attend the logic class.

The German systems of logic have made some progress within these thirty or forty years in Poland. J. S. Fuchs is a commentator of Kant's *Critique of Pure Reason*; and Etienne Gyorgyi has a work on logic, which is a compound of the notions of Kant, and those of Locke and Wolff. This work was published at Posen in 1805. Sigism. Carlowitzky is a later Polish logician, whose works bear the date of 1830, and are of popular and academical character. There were public lectures in several districts of Poland in 1840-41, on the logical systems of Schelling and Hegel; but they are said to have failed in rendering these respective systems clearly understood.

Logical literature has made great advances in seve-

ral districts of the Russian dominions within the last fifty years. There are few works published on the subject in Germany and France but what find their way to some of the seats of learning in that country. In the universities of Moscow, Krakow, Kiew, Kasan, St Petersburg, and Dorpat, regular courses of logical instruction are given every year; and the general system followed in most of these places, is that of a mixture of formal with theoretical logic—the latter element varying with the opinions of the teacher.

CHAPTER XXI.

A BRIEF ACCOUNT OF THE DIFFERENT SYSTEMS OF LOGIC
TAUGHT IN THE UNIVERSITIES OF GREAT BRITAIN AND
IRELAND DURING THE LAST HUNDRED YEARS.

WE purpose confining the following statements solely to the manner in which logic has been taught in the several seminaries and seats of learning in our own country. We shall not make any direct allusion to such logical works as legitimately belong to the philosophical literature of the kingdom, and which are intended for general study and perusal. These will afterwards be noticed in due order.

Cambridge and Oxford, being among the earliest university foundations of Europe, naturally, in reference to their studies and plans of education, partook of the spirit of ancient times; and the predominating elements in that spirit were, controversial divinity and dialectical or logical disputation. As has already been noticed, the Grecian logic became, after the introduction of the Christian religion, one of the chief instruments in the hands of theological disputants. There were, from the first, considerable difference of opinion relative to the Christian system, both as to doctrine and ritual

observances; and the ancient logic, with its forms, essences, entities, categories, and predicables, was soon found to be a powerful engine in disputatious warfare by every heated and zealous partisan. The consequence was, that logic became cultivated in all the universities in Europe more than any other art or science; and Cambridge and Oxford, from their very foundation, lay claim to a fair share of these logical honours.

The University of Cambridge was at a very early period a logical seminary. We are told that, in the year 1109, Joffred, abbot of Croyland, intending to rebuild his monastery, which had been destroyed by fire, deputed Gislebert, with three other monks, to the manor of Cottingham, near Cambridge. These persons, it is stated, were talented and learned, well skilled in philosophical problems and in dialectics. They went daily to Cambridge, and *hired a barn*, in which they gave public lectures. As a part of this instruction it was appointed that, at ten o'clock, brother Terricus, an able sophist, should read to the elder portion of the audience Aristotle's *Logic*, according to the commentaries of Porphyry and Averroes.

In the reign of Henry VIII. a change was made in logical studies at this university, by order of that monarch. He ordered the work of Rudolphus Agricola, *De Dialectica Inventionem*, to be used in conjunction with the works of Aristotle, instead of the logical commentaries of Duns Scotus and Barleæus. It is said that the writings of Agricola, which had then become very popular in many parts of Europe, and had been translated into French and Italian, exercised a considerable

influence in effecting a change in the philosophical opinions of this seat of learning.

Sir Robert Read was a very popular lecturer on logic at Cambridge in 1584. It is said that there were very few students who did not avail themselves of his public instructions, which consisted of an hour five days of the week.

In the course of the seventeenth century, the logical views of Bacon, Descartes, Locke, and Leibnitz, became known in Cambridge; but they were not by any means generally adopted. Bacon was better known than any of the other three philosophers; and about the middle of this century his *Novum Organum* seems to have been rather popular than otherwise. Anthony Wood says, Glanvil lamented that his friends did not send him to Cambridge; because he used to say, that the new philosophy, and the art of philosophizing, were more cultivated there than at Oxford.

For more than a century, Cambridge has been greatly behind in the study and cultivation of logical philosophy; so much so, indeed, as to have become the object of reproachful contumely and scorn. The *Edinburgh Review* of 1833 observes, "In Cambridge the fortune of the study is indicated by the fact, that the *Elements of Logic* of William Duncan of Aberdeen have long dispensed a muddy scantling of metaphysic, psychology, and dialectic, in the university where Downam taught."

Oxford, as well as Cambridge, is highly celebrated for its early logical history. It occupies a conspicuous position in the scholastic ages. Anthony Wood, in his account of Oxford, revels with delight at its logical skill

and reputation in the middle ages. "What university," says he, "I pray, can produce an invincible Hales, an admirable Bacon, an excellent well-grounded Middleton, a subtile Scotus, an approved Burley, a resolute Baconthorpe? all which persons flourished within the compass of one century. I doubt that neither Paris, Bologna, nor Rome, that great mistress of the Christian world, or any place else, can do what the renowned Bellosite (Oxford) hath done. And, without doubt, all impartial men may receive it for an undeniable truth, that the most able arguing in school divinity did take its beginning in England, and from Englishmen." *

In the middle of the thirteenth century, Robert Grosteste, afterwards Bishop of Lincoln, lectured at Oxford on scholastic logic to large audiences. A short time after (in 1308) we find Duns Scotus teaching logic at Clare Hall.

The Baconian logic had made some progress at Oxford in 1623, when the university presented an address to Bacon, who is represented "as a mighty *Hercules*, who had by his own hand greatly advanced those pillars in the learned world, which, by the rest of the world, were supposed irremoveable."

Edward Sandys was a popular teacher of logic at Oxford in 1629, according to the system of Aristotle. He did not, however, adhere strictly to this system; for it is said that he was very partial to both Bacon and Locke, and frequently alluded to their respective logical views in his public lectures.

In the fourth of Archbishop Laud's *Statutes of Oxford* (1636) it appears, "that the lecturer in logic

* *Athe. Oxoniensis*, vol. i.

is, on Mondays and Thursdays, at eight o'clock in the morning, publicly to expound either the introduction of Porphyry, or some part of Aristotle's logic, by clearly and tersely explaining the text; and he is not to dwell long on questions about the method or analysis of the book or text, but in the usual way to raise questions pertinent to the subject of the book, and to resolve them with brevity and force." "The auditors of this lecturer are to be all scholars, from the end of their first year till they are presented for the degree of Bachelor of Arts."

These *Statutes* were, however, gradually lost sight of; and a general laxity as to logical studies and philosophy was induced throughout the entire university. This subject has been of late so fully and accurately depicted by Sir William Hamilton, that I shall make no apology, on the present occasion, for quoting his remarks.

"During the scholastic ages," says he, "Oxford was held inferior to no university throughout Europe; and it was celebrated, more especially, for its philosophers and dialecticians. But it was neither the recollection of old academical renown, nor any enlightened persuasions of its importance, that preserved logic among the subjects of academical tuition, when the kindred branches of philosophy, with other statutory studies, were dropt from the course of instruction actually given. These were abandoned from no conviction of their inutility, nor even in favour of others of superior value: they were abandoned when the system under which they could be taught was, for a private interest, illegally superseded by another, under which they could

rest. When the college fellows supplanted the university professors, the course of statutory instruction necessarily fell with the statutory instruments by which it had been carried through. The same extensive, the same intensive, education which had once been possible when the work was distributed among a body of professors—each chosen for his ability, and each concentrating his attention on a single study—could no longer be attempted when the collegiate corporations, a fortuitous assemblage of individuals, were authorized to become sole teacher of the whole academical encyclopædia. But while the one unqualified fellow-tutor could not perform the work of a large body of qualified professors, it is evident that, as he could not rise and expand himself to the former system, the present, existing only for his behoof, must be contracted and brought down to him. This was accordingly done. The mode of teaching, and the subjects taught, were reduced to the required level and extent. The capacity of lecturing, that is, of delivering an original course of instruction, was not now to be expected in the tutor. The pupil, therefore, read to his tutor a lesson out of a book—on this lesson the tutor might, at his discretion, interpose an observation, or preserve silence; and he was thus effectually guaranteed from all demands beyond his ability or inclination to meet. This reversed process was still denominated a lecture. In like manner, all subjects which required in the tutor more than the fellow's average of learning or acuteness, were eschewed. Many of the most important branches of education in the legal system were thus discarded; and those which it

was found necessary or convenient to retain in the intrusive, were studied in easier and more superficial treatises. This, in particular, was the case with logic.

“ Until the statutory system was superseded, an energetic and improving exercise of mind, from the intelligent study of the most remarkable monument of philosophical genius imposed on all, was more especially secured in those who would engage in the subsidiary business of tuition. This, and other conditions of that system, thus demanded a far higher standard of qualification in the tutor, when the tutor was still only a subordinate instructor, than remained when he had become the exclusive organ of academical education. When, at last, the voice of the professors were silenced in the university and in the colleges, the fellows had been able to exclude all other graduates from the new principal office of tutor, the study of logic declined with the ability of those by whom the science was taught. The original treatises of Aristotle were now found to transcend the college complement of erudition and intellect. They were accordingly abandoned; and with these the various logical works previously in academical use, which supposed any reach of thought, or an original acquaintance with the organon. The *Compend* of Sanderson stood its ground for a season, when the more elaborate treatises of Brerewood, Crakanthorpe, and Smiglecius were forgotten. But this treatise, the excellent work of an accomplished logician, was too closely related to the *Organon*, and demanded too frequently an inconvenient explanation, to retain its place, so soon as another text-book could be introduced, more accommodated to the fallen and falling standard

of tutorial competency. Such a text-book was soon found in the *Compendium* of Aldrich.”*

Oxford’s modern logical history is brief, and soon told. Aldrich’s logic appeared in 1691. Of the nature and merits of this work, the learned and able writer we have just quoted, observes, “Absolutely considered, it has little or no value: it is but a slight eclectic epitome of one or two logical treatises in common use (that it is exclusively abridged from Wallis is incorrect); and when he wanders from, or mistakes his authorities, he displays a want of information to be expected, perhaps, in our generation, but altogether marvellous in his. It is clear that he knew nothing of the organon, and very little of the modern logicians. The treatise likewise omits a large portion of the most important matters; and those it does not exclude are treated with a truly modifying brevity. As a slender introduction to the after study of logic (were there not a hundred better), it is not to be despised; as a full course of instruction, as an independent system of the science, it is utterly contemptible. Yet, strange to say, the *Compend* of Aldrich, having gradually supplanted the *Compend* of Sanderson, has furnished, for above a century, the little all of logic taught in these latter days by the university of Bradwardin and Scotus.”†

About five and twenty years ago, Dr Whately’s *Elements of Logic* made their appearance at Oxford, and were instantly effective in giving a new and vigorous impulse to dialectic pursuits. We shall notice this work in the following chapter. In the mean time we may mention, that the doctor informs us that at the

* Edin. Review, 1833.

† Ibid.

period of the publication of his work logical studies were at the lowest ebb at the university. He says, "a very small proportion even of distinguished students ever became proficient in logic, and by far the greater proportion pass through the university without knowing any thing at all of the subject. I do not mean that they have not learned by rote a string of technical terms, but that they understand absolutely nothing whatever of the principles of the science."

A great change has been effected in Oxford of late years, and almost solely through the labours of Dr Whately. Since the publication of his *Elements*, many excellent works have made their appearance from this venerable seat of learning, in different departments of logical science, some of which will be noticed more particularly in the following chapter of this volume.

The logical systems taught in King's College, and University College, London, since their respective establishment about twenty years ago, have been of an eclectic character, partly philosophical, and partly formal or syllogistic.

We shall now briefly direct attention to the Scottish universities in reference to logical studies. These are Edinburgh, Glasgow, St Andrews, and Aberdeen.

As we have already noticed, the leading Scottish divines, at the time of the Reformation, took a decided part against the scholastic logic, and did every thing they could to effect a change in the general routine of logical studies within the boundaries of their jurisdiction. The feeling against what was then considered one of the chief instruments of papal power, still manifested itself long after the principal events of the Refor-

mation had become merely matters of history. But so far back as 1647, more than two hundred years ago, the General Assembly of the Church of Scotland, on account of several complaints having reached it relative to the manner of teaching the Aristotelian logic, appointed commissioners to inquire into the alleged grievances, and to suggest a remedy. In one, among the several acts of this commission, it is declared, "that the *dyting* (dictating) of long notes has, in times past, proved not only a hindrance to the necessary studies, but also to the knowledge of the text itself, and to the examination of such things as are taught; it is therefore recommended by the commissioners to the dean and faculty of arts, that the regents (the professors who had charge of educating the youth) spend not so much time in *dyting* of their notes; that no new lesson be taught till the former be examined; that every student have the text of Aristotle in Greek; and that the regent first analyse the text, *viva voce*, and thereafter give the sum thereof in writing."

In 1696, a parliamentary commission issued a variety of particular regulations respecting the course of logic and metaphysics in all the universities of Scotland. These regulations had for their object the purging of those institutions of heresy and infidelity. In 1699, this commission orders the several principals of universities "to go through the whole system of philosophy (logic and metaphysics), to compendize it, and to make their remarks thereon, as they shall think fit; and to present their remarks to the commission against their first meeting in June next, with certification; if they fail, the commission will censure them for their con-

tempt." In a second meeting of the commissioners, a few days after the promulgation of this order, they enumerated sixteen separate propositions in the prescribed courses of logic and metaphysics, which they find to be erroneous, and which they forbid to be taught, because they were *contra fidem et bonos mores*. About the same date, this same commission ordered the university of St Andrews to send to the university of Edinburgh copies of the systems of logic and metaphysics taught at St Andrews.

The causes of these alleged heresies arose from certain tenets which had been industriously circulated throughout the Scottish universities on the Epicurean philosophy, taken from the commentaries on it, published by the celebrated Gassendi.

It does not, however, appear that any very great changes in the abstract principles of logical studies were ever recommended by the Scottish divines as a body. What changes were subsequently effected in the several universities of Scotland, of a systematic character, arose from individual teachers of the science, and the progress of philosophy in general.

We shall now make a few statements and remarks on the several universities of Scotland in regular order.

GLASGOW UNIVERSITY. — This university has been distinguished, for the last century especially, for the importance attached to logical studies ; and also for the great and, in the opinion of many, judicious changes introduced into the mode of treating the science of logic generally, both as to its principles and forms.

The logic of Ramus was introduced here at the time

of the Reformation ; and, up to a comparatively modern date, continued to be exclusively taught within the walls of this university.

In 1727, a *royal visitation* of the university took place, and certain changes in the mode and times of giving lectures on logic and metaphysics were recommended by it ; but these alterations only effected the plan of teaching logic, and did not in the least effect any alteration in the mode of discussing the principles of the science.

In 1750, Adam Smith, the author of *The Wealth of Nations*, was appointed to the logic chair in Glasgow, but he only held it for one year.

In 1774, Dr Jardin was appointed professor of logic in Glasgow university—a man of active mind and sound judgment. He made great alterations in the mode of studying logic. He tells us that his “class opened on the 10th October with reading and commenting on some portions of the *memorabilia* of Socrates, which exercise continued two or three weeks, until the greater part of the students were assembled. On the 1st of November, the proper business of the course began with an explanation of Aristotle’s logic. This subject occupied the attention of the class till about the beginning of February, when the professor entered upon *metaphysics*.” The doctor goes on to inform us how the public feeling against the scholastic or old logic gradually increased, until it was found absolutely necessary to make great changes in the mode of teaching logical science. He says : “ Having myself attended the logic class in this university, I remember well the general impression which was made

upon my mind by the lectures then delivered, and also the opinion which was entertained of them by the more intelligent of my fellow-students. The sentiment which universally prevailed among us was, that though the professor explained the subjects of which he treated with great perspicuity and distinctness, yet no useful or permanent effects could possibly result from his prelections, either in the way of promoting activity of mind, or of establishing sound scientific principles." "This conviction of the general uselessness, and even positively hurtful consequences, of spending six or seven months in the study of logic and metaphysics, was not confined to the youth within the walls of the college. From the time that the lectures began to be delivered in English, the eyes of men were opened to the unsuitable nature of the subjects of which they treated; and the defects of the system, as embracing a very important part of public education, became every day more striking, and called more loudly for a radical reform. It was observed by those who interested themselves in this question, that the subjects introduced in the logic class, even when perfectly understood, had little or no connexion with that species of knowledge which was necessary to prepare the student either for the speculative pursuits of science, or for the active business of life. The local situation, too, of this university—in a great commercial city, where a quick perception of utility, and a clear insight into the adaptation of means to ends, may be supposed to predominate—gave frequent occasion to animadversions on our scheme of preparatory instruction. Intelligent persons who sent their sons to the logic class, although not themselves

proficient in literature, could not fail to observe that the subjects to which their attention was directed had no relation to any profession or employment whatever; that the discussions connected with them had no analogy to those trains of thinking which prevail in the ordinary intercourse of society; and, in short, that nothing could be derived from prelections on such topics which was likely in the smallest degree either to adorn conversation, or to qualify the student for the concerns of life.”*

Dr Jardin goes on, in his *Essay*, to state that he found it was absolutely necessary to effect a great change in his logical instructions; and, after much anxious thought, he came to the conclusion of grounding his system entirely upon an analysis of the mental faculties. “The particular department,” says he, “of mental science I have selected for the business of this class, is an analysis of the powers of the understanding,—perception, attention, consciousness, reflection, memory, imagination, abstraction, judgment, and reasoning. The object of this analysis, I need hardly observe, is to communicate distinct notions of those original faculties—their operations and offices—their connexion and intimate dependence upon each other.”

This formed the basis of Dr Jardin’s logical theory. He did not, however, altogether discard the syllogism. He thought it a useful instrument in particular cases. The following remarks convey his views on the subject of logic generally, as fully as can well be done in so short a compass:—

“It is by minute attention to the progress of the

* Outlines of a Philo. Education, p. 25.

reasoning faculties, in the different situations in which man is placed, that we shall most successfully lay the foundations of an act of reasoning ; for here especially, according to Lord Bacon, we must obey nature, observe her dictates, and follow the course she prescribes. She imperatively enjoins that the first efforts of art should be directed to the improvement of those powers of the mind by which we form clear, just, and distinct notions—by which we discriminate likewise differences and relation among the various subjects of our knowledge—as being the only solid basis for an enlightened education. It is indeed impossible to teach men to reason until they have been first taught to know—that is, to form clear and accurate conceptions of the things about which they are to reason ; and, when the former process shall be correctly accomplished, few rules will be necessary to direct them to the latter. Thus, in the different professions and occupations of life, we find that men reason easily and justly from mere habit, and without any assistance of an artificial logic ; because, from their daily pursuits, they have formed distinct notions relative to the several objects about which their reason is employed.

“ But though, by this natural logic, as it may be called, the understanding may be so improved as to answer all the practical purposes of life, it frequently happens, in certain cases where a man is called upon to exercise his reason, that the assistance of art may be extremely useful. When the objects presented to the mind are of an abstract, general, or complicated nature, the logical instruments of definition, division, and

classification, may be applied with great advantage; and when, in the comparison of different objects, of which the relations are so remote or obscure that they cannot be discovered but by means of intermediate ideas connected with both extremes, the faculty of reason finds again resources in art, which, by suggesting certain positions and arrangements of thought, lead the mind by safe and easy steps to the perception of truth. We have accordingly received from the philosophers of Greece an art for improving and directing the power of reason—a system of rules according to which, in particular cases at least, comparison may be fairly made, and conclusions justly deduced.”*

We have thus been induced to dwell upon the system which Dr Jardin introduced into the university of Glasgow at some length,—partly from the extended period he occupied the logic chair, full fifty years, and partly from the widely spread and distinguished reputation he has left behind him as a teacher and logician.

We shall now merely add a few remarks from the Commissioners’ Report of 1830 relative to this university:—“Logic is here taught with rhetoric. The first division of the logical course contains an analysis of the powers of the understanding, with the means of improving, assisting, and directing them in the acquisition of knowledge, and in the investigation of truth. Dr Buchanan continues the system of Dr Jardin, with such alterations as his own experience has suggested to him. He thinks logic could not be taught to young persons without examination; and he conceives the examinations and the hearing of essays to be more

* Essay, 126.

useful than delivering lectures. Average number of students (1828), 150."

MARISCHAL COLLEGE, ABERDEEN.—This college was founded in 1593. Logic was here originally taught in the first course as a necessary study to every other. This has been reversed for many years, and it now takes the last place. Logical tuition is given here in conjunction with moral philosophy.

The Commissioners' Report of 1830 states, that "the system followed here as to logical studies is, that the lecturer must shew that the foundation of a proper system of logic must be laid in an analysis of the mental faculties; the distinction of the various kinds of terms and the right use of them are explained; the nature and varieties of propositions are pointed out; there is given an analysis of arguments, shewing how their truth may be discovered, or their fallacy detected; and there is subjoined a description of the methods of classification and arrangement, which best enables us to retain and to apply the knowledge we have acquired. Average number of students in logic class, 34."

KING'S COLLEGE, ABERDEEN.—This college was founded in 1506. Logic is taught in this establishment in conjunction with rhetoric. The scholastic system was the established one here till about the middle of the last century.

In the new regulations of King's College in 1753, it was, among other things, recommended that the study of logic should be shortened, to give more time for the acquisition of historical knowledge.

Till about 1760, logic, with the abstract sciences, took precedence over mathematics and natural philosophy; because it was alleged that these sciences could not be successfully taught while men were ignorant of the art of reasoning and the rules of judging. But this rule was altered upon the ground, "that mankind are now fully convinced of the inefficiency of the syllogistic art to guide the understanding in the discovery of truth. The logic which can answer this end must have for its groundwork all arts and sciences, and be founded on an analysis and natural history of the intellectual faculties. Every illustration and maxim must be derived from these sources; and its rules can be understood no further than the several sciences which it reviews and criticizes are understood. Nor is the previous knowledge of logical rules necessary towards acquiring the elements of science. Man exercises his understanding before he is formally instructed in the rules of reasoning. Upon these grounds, logic was considered to belong more naturally to the last than the first part of a philosophical course of education."

ST ANDREW'S UNIVERSITY.—Up to the period of the appointment of Mr Henry Rymer to the logic chair of St Andrews in 1747, the logical system of Peter Ramus had been generally taught in the university. Rymer, however, was a zealous disciple of Locke's, and a great admirer, too, of Bacon's *Novum Organum*; and he made the first regular departure from the old formal system. He introduced, as a course of preliminary lectures, the leading logical views of both Bacon and

Locke. Still, however, the formal or syllogistic rules were retained, but made to follow as a sort of secondary course of logical study. Mr Robert Watson succeeded Professor Rymer in 1756, and followed the same general plan of tuition as his predecessor.

Mr William Barron succeeded Mr Watson in 1778. The logical system which Mr Barron taught is founded on the doctrines of the *common sense* school of thinking. The cultivation of the understanding or reason, he says, ought to be the great object of all mental improvements. "It is the faculty by which we are most distinguished above the creatures of this world, and by which, perhaps, we partake most of the constitution of superior natures." "Of all arts, then, that surely is entitled to attention which pretends to tell us how we may improve and properly employ this most useful faculty; and logic is that art. The professed purpose of it is to teach the right use of reason, both in the investigation and in the communication of truth; to inform us how to introduce clearness and good order among our ideas; to explain the operations of the mind which are conversant about them; and by the proper exercise of which operations we shall be least in danger of deviating into error."*

According to this view of the object of logic, he treats it under two leading divisions:—the nature of ideas, which are the materials on which the reason or understanding acts; and the nature of the faculties or powers of the mind which are immediately engaged in the act of reasoning. The explanations under

* Barron's Lectures, vol. ii. p. 362.

these two heads, embrace the whole science or art of logic which can be of any utility whatever.

On the nature of the syllogistic logic, Mr Barron makes the following remarks:—"The principal operations of any investigation are the invention of intermediate ideas, and the comparison of them with one another, and with the extremes. The invention of middle terms is the chief operation, and excellence in it is the most important qualification any inquirer can possess. It seems to depend on natural sagacity and acuteness, fortified and improved by exercise. No art can be of any use. From syllogism, in particular, no aid can be derived. It does not even pretend to give any aid. Its only object is to assist in the second operation, the comparison of ideas; and we have seen that the syllogistic exhibition is not more perspicuous than the natural one." . . . "What is the mystery of this mighty syllogistic art, which has so long engaged the attention of learned men, and is still accounted by many of that description to contain something mysterious, or to be an analysis of the art of reasoning? It is no more than this: whatever agrees with any genus, will agree with every species of that genus; or whatever disagrees with any genus, will disagree with every species of that genus. If this be the principle of the art, can we wonder at the self-evidence of all the conclusions of all its syllogisms, or that it never gratified science or business with the discovery of any useful truth?"*

Mr Joseph Hunter succeeded Mr Barron as profes-

* Lect., vol. ii. p. 546.

sor of logic in 1806. He followed his immediate predecessor in the mode of treating the science, making it dependent upon a knowledge of the faculties of the understanding.

The Report of the Parliamentary Commission of 1830, makes the following statements on the logical tuition of St Andrews:—"The professor of logic teaches one class on five days of the week one hour, from eleven to twelve each day. He commences his prelections with an investigation of the powers of external perception, as exercised through the medium of the five senses; passing thence to an analysis of the intellectual operations of attention, conception, abstraction, association of ideas, memory, imagination, judgment, and reasoning, he next considers the various sources of our prejudices and errors, and the means which have been devised to guard against them; taking here a hasty survey of the syllogistic logic of Aristotle, and pointing out the advantages which induction, or the study of facts, must ever possess over the multiplication of verbal distinctions. He then concludes his logic course with some lectures on method, explaining its nature, and shewing its importance as an indispensable preparation for profitable study, and for perspicuous and persuasive writing."

Among the general suggestions of the Commissioners in treating of the university of St Andrews, is one pointing out the advantages which would follow from a system of examination on the logical lectures delivered. The report states: "Now, mere lecturing is a very imperfect mode of teaching. Addressing itself in the same way to minds of the greatest variety as to acumen, it must

necessarily leave a multiplicity of matters obscure to some that may be perfectly clear and comprehensible to others, and may thus be available in many cases to communicate only the most superficial information. It does not, moreover, supply necessarily any stimulus whatever to mental exertion—any excitement to cultivate habits of reflection, of judging, of reasoning, of arrangement, of statement and communication, the great object of all academical tuition. Very advanced students may perhaps find no other aid necessary for forwarding them in their course. But the great mass of students are not singularly gifted persons, and must be catechised—must be dealt with in easy colloquy—must be indulged with explanations—must frequently perform exercises, in order to insure to them the most ordinary portion of learned attainment.”*

Mr William Spalding was successor to Mr Hunter, and entered on his duties in 1845. Professor Spalding enters more fully into the syllogistic logic in his lectures than any of his predecessors for the last century. The number of logical students average about *forty* annually.

Thus we see that, till within these few years, the mere formal logic was almost entirely banished from the Scottish colleges, and a system adopted in its stead which had for its direct object the improvement of the entire mental faculties, with a view of conducting the mind to the highest logical manifestations. This mode of teaching logic had a powerful and direct tendency to uphold the speculative views of the *common sense* philosophy. Indeed, the mode of teaching this science

* Report, p. 51.

was a pure exponent of the mental principles of this school relative to reasoning generally.

EDINBURGH UNIVERSITY.—The foundation of this seat of learning is intimately associated with the science of logic. It may be said to have been founded by the labours and munificence of a Mr James Lawson, a minister of Edinburgh, who was a passionate admirer of logical studies, and whose aim was to introduce them to public notice and favour through the medium of a school on an extended scale. General philosophy was to be taught in it ; but the scholars were to be instructed, in an effective and careful manner, in every thing that appertained to dialectical knowledge and skill.

The logical system of Peter Ramus was countenanced at an early period in the history of this seat of learning. In 1604, we find the students were interrogated on his *Dialectics* and the *Ars Syllogistica*. Porphyry and the categories were also used—together with Aristotle's *Topics* and book of *Sophisms*. In 1615, we find a Mr Young professor of logic in this university—a gentleman who enjoyed an unrivalled reputation as an able and subtile expounder of Aristotle's system.

The formal appointment of the logic chair in Edinburgh, bears date from the year 1708. Up to a certain period this chair was held in conjunction with that of rhetoric.

Mr John Stevenson was appointed logical professor in 1730. The science of metaphysics was likewise joined to his chair. The logic class was the second in the course, and the lectures were given in the Latin language. Mr Stevenson, it appears, did not admire

the scholastic logic ; but he, at the same time, thought it his duty to give a distinct sketch of its history and nature, and to render that art which had been the admiration of ages in some measure understood by his students. His conviction was, that the Aristotelian logic presented a formidable barrier to the free and expansive movements of the human mind, and to the extension of useful and popular information ; and he was, consequently, particularly anxious to impress upon the minds of his young auditory, that truth was not to be discovered by the employment of such an instrument. The work he used as a text-book was the logical treatise of *Heineccius*. He did not, however, follow it slavishly, as may readily be surmised—inasmuch as this work is strongly tinged with Aristotelian principles and forms. At the time Mr Stevenson was appointed to the logic chair, the philosophy of Locke had just reached the university. Mr Stevenson entered warmly into its spirit, and was, in fact, the first person of any note who introduced to academical students the *Essay on the Human Understanding*. He also introduced to his class Dr Wynne's abridgement of the *Essay*, which he considered a highly useful publication. A short time after, Professor Stevenson adopted this abridgement of Locke's work as a text-book, and was thus instrumental in laying the foundation of the English philosophical system in the university. He died in 1775, having held the logic chair for *forty-four* years.

Mr John Bruce was appointed Mr Stevenson's successor. His system of logical tuition was founded on Locke and Bacon's philosophy. According to Bruce, scientific evidence rested on three general principles,—

the evidence of consciousness or attention, the evidence of sensation, and the evidence of cause and effect. Mr Bruce resigned his chair in 1792.

Dr James Finlayson succeeded Mr Bruce, and held the logic chair till 1808. His general logical instructions were grounded on the principles of the *common sense* philosophy, then all prevalent in Scotland. Dr Finlayson was an ardent admirer of the opinions of the late Dugald Stewart, on the practicability and usefulness of a philosophical logic.

Dr David Ritchie was Dr Finlayson's successor, and filled the chair till the appointment of Sir William Hamilton in 1836.

The Commissioners appointed to examine into the Scotch colleges in 1830, make the following observations, in their Report, on the subject of logical studies in the university of Edinburgh:—"The logic class meets one hour each day, for five days of the week, during the session of five months and a half. Some students so young as thirteen have entered this class; but in general they are about fifteen years of age, and many of them older. The average number who attend is from 170 to 175, or 180. The lectures are divided into four parts,—the first consists of a view of intellectual philosophy, or a description of the faculties by which we acquire the elements of our knowledge, the laws which regulate their operation, and the imperfections to which they are liable, with hints for their improvement. The second part comprehends the theory of evidence, and includes a view of demonstrative evidence, of the evidence of sense, consciousness, memory, testimony, experience, analogy, mixed mathe-

matics, and the calculation of chances. The third includes reasoning, and explaining syllogistic reasoning, with the various abridged modes of it in common use, and the sophisms or fallacious reasonings connected with it; and, secondly, inductive reasoning, and a view of the prejudices which are apt to mislead the mind. The fourth part explains the analytical and synthetic method of conducting our reasonings, as well as the Socratic and controversial method, and the principles of interpreting written documents. The course concludes with a view of the theory of language, or principles of universal grammar.”*

About three years after the Report of the Government Commissioners on the state of the Scotch universities, from which we have taken some passages, there appeared in the *Edinburgh Review* some pungent remarks on the state of logical knowledge and tuition in Scotland generally. The writer, Sir William Hamilton, observes, that in the colleges “of Scotland the chairs of logic have for generations taught any thing rather than the science which they nominally profess—a science, by the way, in which the Scots have not latterly maintained the reputation once established by them in all, and still retained in other departments of philosophy. To the philosophers of our country we must confess, that in part at least is to be attributed the prevalence of the erroneous notions on this subject promulgated by Locke. No system of logic deserving of notice ever appeared in Scotland; and for Scottish writers of any merit we must travel back for more than two centuries, to three contemporary authors,

* Report. 1830.

whose abilities, like those indeed of almost all the more illustrious scholars of their nation, were developed under foreign influence — to Robert Balfour, Mark Duncan, and William Chalmers, professors in the universities of Bordeaux, Samur, and Angers.”

Sir William Hamilton succeeded Dr Ritchie in 1836 in the Edinburgh University. About four years after this, it is said that the professor introduced what is termed his new analytic method of teaching formal logic. This method proceeds on a *thoroughgoing quantification of the predicate*. By the adoption of this principle we are told that “past evils are corrected, past omissions supplied, and logic receives its highest development in the perfection and simplicity of its form.”

The entire doctrine of the conversion of syllogisms is, on the principle of this new analytic method of Sir William’s, pronounced to be useless and false. “This inconsistent and cumbrous doctrine resulted, as we have said, from a false analysis by logicians of the elements with which they had to deal. The whole doctrine is founded upon the relation of quantity between the subject and predicate in a proposition; but if a principal element of that relation be left out, the doctrine will of course be defective. Logicians stand chargeable with this neglect. They commenced to recompose their system before, by thorough decomposition, they had obtained all the elements requisite for that purpose.”*

In Ireland there are three collegiate institutions where

* New Analytic of Logical Forms, p. 30, Edinburgh, 1850, to which the reader is referred for a full account of the system.

logic forms an essential part of academical learning: Trinity College, Dublin, the Roman Catholic College of Maynooth, and the three Queen's Colleges of Cork, Galway, and Belfast, now embodied into one university.

In Trinity College, Dublin, logic has been taught from the system of Archbishop Murray, enlarged and commented on by Mr Walker and other writers. In the preface to the edition of his book of 1847, it is stated that "many writers consider the study of logic as the proper introduction to a metaphysic, others as intended as a prelude to mathematical pursuits, and accordingly works on logic have been composed with reference to either of these views; but until some system of logic is produced in our language, which is founded upon, and grows out of some philosophical system, it is surely better for the student to study a purely formal logic, independent of any philosophical system, and yet applicable to all. Such are the sentiments of a celebrated writer, and such have been the views of the University of Dublin in their adoption of the present treatise."

In the introduction to the archbishop's work, now used as a text-book, it is stated, that after the student goes through the syllogistic logic, he is introduced to the *new* or modern logic of Mr Locke's *Essay on the Human Understanding*.

In the Catholic College of Maynooth, in Ireland, logic is taught with great care and erudition. All students are examined on the science when they enter the college. The system taught is of a comprehensive character, although the text-books in common use present but a meagre outline of the study. But the

professor of logic invariably examines the students in reference to their knowledge of the most elaborate and systematic works. The logical philosophy countenanced, however, has a decided leaning to theological science, as well as to those particular views of scientific truth which the Catholic clergy generally entertain and promulgate in their ordinary channels of philosophical literature. The number of logical students amounts to about sixty annually.

In the Queen's Colleges, the logic class is only now about to open. There is no prescribed mode of teaching the science ; and it is quite open to the several logical professors to adopt any system of tuition, in accordance with their own individual judgment.

CHAPTER XXII.

THE LOGICAL LITERATURE OF GREAT BRITAIN AND THE UNITED STATES OF AMERICA, OF A PHILOSOPHIC AND SYSTEMATIC CAST, FROM THE YEAR 1800 TILL THE PRESENT DAY.

THE logical works of Great Britain during the last half century have been both numerous and important. The first twenty years of this period were comparatively unfruitful; but since then both logical studies and literature have received fresh impulses and a somewhat new direction.

At the commencement of this century we have Mr Belsham's *Logic* (1801). He defines his subject thus: "The use of logic is to guide and assist the intellectual powers in the investigation of truth, and the communication of it to others." . . . "Logic is not, as some have supposed, a mere explanation of scholastic phrases, nor, as others have imagined, the art of disputing by mechanical forms; but it is one branch of the theory of the human mind applied to a valuable practical purpose."

Mr Belsham keeps to the old division of his subject into four parts—Perception, Judgment, Reasoning, and

Disposition ; the four operations of the mind employed in the acquisition and communication of knowledge.

Dr Richard Kirwan's *Logic* (1807) is a highly respectable and useful treatise. He defines logic thus :— " Logic is both a science and an art ; it is a *science* inasmuch as, by analysing the elements, principles, and structure of arguments, it teaches us how to discover their truth, or detect their fallacies, and point out the sources of such errors. It is an *art*, inasmuch as it teaches how to arrange arguments in such a manner that their truth may be most readily perceived, or their falsehood detected." *

Up to the year 1820, the writings of Dugald Stewart on mental philosophy occupied the chief place in public estimation, relative to the abstract nature and application of the principles of logical science. Some of his principal works made their appearance during the early part of the present century. They abound with many most ingenious speculations on logical studies generally, and on the varied character of the evidence which belongs to many individual departments of scientific investigation. Much valuable instruction is to be derived from the volumes he published within the period now mentioned. We shall not, however, refer to them again, as we have already made a formal allusion to them in a previous chapter. We have classed their highly-gifted author with the philosophical school to which he belonged, and to which he was so great an ornament.

When Dr Thomas Brown's *Lectures on the Philosophy of the Human Mind* (1822) made their appearance, a new direction was given to mental science ; and

* Vol. i. p. 1.

the subject of reasoning, and logical deduction and inference, were handled after a new fashion. Brown's theory of the argumentative process was altogether different from that of his predecessor's, Professor Stewart: in fact, they had nothing in common, save perhaps the unity of sentiment which both philosophers expressed on the inutility of the syllogism, or all mere formal logic.

The science of logic or of reasoning forms one of the divisions in Brown's system of the philosophy of mind. His general position is, that there are no independent or distinct faculties of the intellect, but simply different states of it. Every thing is merged into one universal law, which he calls the *law of suggestion*. This suggestion is either *simple* or *relative*. All reasoning belongs to the latter. Propositions of every kind are but the verbal enunciation of the relation of two terms. Every proposition implies an analysis; and there may be propositions expressive of position, of resemblance, of order, of proportion, of degree, and of comprehension.

Brown makes no distinction between *reason* and *judgment*—a distinction which is found in almost every other work on logic. Reasoning with him is nothing more than a series of relative suggestions, or feelings of relation, which, in being expressed in formal language, constitute a series of propositions. The terms *reason* and *judgment*, may be indifferently applied to the susceptibility of feeling these relations. He says, "The natural progress of reasoning I have already explained to you, and illustrated by examples, both of the analytic and proportional kind. One conception follows another conception, according to certain laws

of suggestion, to which our Divine Author has adapted our mental constitution; and, by another set of laws which the same Divine Author has established, certain feelings of relation arise from the consideration of the suggesting and suggested object. This is all in which reasoning, as felt by us, truly consists. We have the conception of A; it suggests B; and these two conceptions coexisting, we feel some relation which they bear to each other. B, thus suggested, suggests C; and the relation of these is felt in like manner; and thus, through the longest ratiocination, analytical or proportional, each subject of our thought suggests something which forms a part of it, and is involved in it, or something which has to it a certain relation of proportion; and the relation of comprehension in the one case, or of proportion in the other case, is felt accordingly at every step. Nothing, surely, can be simpler than a process of this kind; and it is not easy to conceive how the process could be made shorter than nature herself has rendered it, unless every truth were known to us by intuition. Objects, and the relation of objects—these are all which reasoning involves; and these must always be involved in every reasoning. While reasoning, then, or a series of propositions, is necessary for the development of truth, the intervening conceptions which form the subjects of those propositions that connect one remote conception with another, must arise successively in the mind, and their relations be felt, in like manner, successively. What is it which the syllogistic art would confer on us in addition? To shorten the process of arriving at truth, it forces us to use in every case three proposi-

tions, instead of the two which nature directs us to use. Instead of allowing us to say, 'Man is fallible; he may therefore err even when he thinks himself most secure from error'—which is the spontaneous order of analysis in reasoning—the syllogistic art compels us to take a longer journey to the same conclusion by the use of what it calls a major proposition—a proposition which never rises spontaneously, for the best of all reasons, that it cannot rise without our knowledge of the very truth which is by supposition unknown. To proceed in the regular form of a syllogism, we must say, 'All beings that are fallible may err even when they think themselves most secure from error. But man is a fallible being; he may therefore err even when he thinks himself most secure from error.' In our spontaneous reasonings, in which we arrive at precisely the same conclusions, and with a feeling of evidence precisely the same, there are, as I have said, no major propositions, but simply what, in this futile art, are termed technically the minor and the conclusion. The invention and formal statement of a major proposition, then, in every case, serve only to retard the progress of discovery, not to quicken it, or render it in the slightest degree more sure." Again, he observes, "The syllogism, therefore, which proceeds from the axiom to the demonstration of particulars, reverses completely the order of reasoning, and begins with the conclusion in order to teach us how we may arrive at it. It is in the great journey of truth, as if, in any of our common journeyings from place to place—from Edinburgh to London, for example—we were to be directed first to go to London, and then to find out

York, or some other intermediate town, when we might be quite sure of knowing the way from York to London, because we must already have travelled it. Is this the sort of direction which we could venture to give to any traveller? or would not every traveller, if we were to venture to give them such a direction, smile at our folly? ”*

On the nature of logical science generally, Dr Brown makes the following remarks:—“ That there may be, or rather that there is, a rational logic, I am far from denying; and many useful directions, in conformity with a certain system of rules, may be given to the inexperienced student, that may facilitate to him acquisition of knowledge, which, but for such directions, he would have made only more slowly, or perhaps not made at all. The art of reasoning, however, which a judicious logic affords, is not so much the art of acquiring knowledge as the art of communicating it to others, or recording it in a manner that may be most profitable for our own future advancement in the track which we have been pursuing.” . . . “ If an art of reasoning is to be given to us, it is surely to be an art which is to render the acquisition of knowledge more easy, not more difficult—an art which is to avail itself of the natural tendency of the mind to the discovery of truth, not to counteract this tendency, and to force the mind, if it be possible, to suspend the very progress which was leading it to truth.”

Thus we see, that it is the distinctive characteristic of Dr Brown’s theory of reasoning, that all the logical powers of the understanding are absorbed in conscious-

* Lecture 49.

ness, and this consciousness is again resolved into simple feeling. There is but one principle or law of the mind—that of suggestion—which regulates the several combinations and successions of feelings, and which imparts that unity of operation and design which enters into every conception we can form of mind or intellect as a whole. In reference to cause and effect, which enter into the logical systems of many authors, Dr Brown identifies causation with succession. The principle he holds is simply this—Every cause is an invariable antecedent; therefore every invariable antecedent is a cause.

Archbishop Whately's *Elements of Logic* (1825), is one of the most important and influential logical publications of modern times. It is an able and popular exposition of the scholastic logic; and has, in fact, been the main instrument in producing the revival of the syllogistic system in Great Britain. The work has gone through many editions, and is used more or less, in several seats of learning, as an ordinary text-book for logical students.

The archbishop informs us, that “logic, in the most extensive sense which the name can with propriety be made to bear, may be considered as the *science*, and also as the *art of reasoning*. It investigates the principles on which argumentation is conducted, and furnishes rules to secure the mind from error in its deductions. Its most appropriate office, however, is that of instituting an analysis of the process of the mind in reasoning, and in this point of view it is, as has been stated, strictly a science; while, considered in reference to the practical rules above

mentioned, it may be called the art of reasoning. This distinction, as will hereafter appear, has been overlooked, or not clearly pointed out, by most writers on the subject; logic having been in general regarded as merely an art, and its claim to hold a place among the sciences having been expressly denied."

This definition of the nature and offices of logic has been the subject of numerous criticisms, embracing very opposite opinions and statements. We cannot enter into these, except by merely stating that this account of logic is very incorrect, and in some points contradictory. It is abundantly proved by the most cursory glance at the history of logic, that, in opposition to the statements of the archbishop, the opinion of its ranking as a science is almost the uniform one in all ages. This error of the definition is simply an error of a matter of fact. The contradiction involved in it is apparent. The author says, "The most appropriate office of logic is that of instituting an analysis of *the process of the mind in reasoning*;" and then again, "*that the process of reasoning is alone the appropriate province of logic.*" If the object of logic is to analyse the process of reasoning, then logic must be identified with the science of mind; for this science does, among other things, profess to make such an analysis. But when the archbishop's definition is contrasted with other portions of his work, the contradiction is still more marked and irreconcilable. He says, "In introducing the mention of *language* previously to the definitions of logic, I have departed from established practice, in order that it may be clearly understood that logic is entirely conversant *about language*—a

truth which most writers on the subject, if indeed they were fully aware of it themselves, have certainly not taken due care to impress on their readers.”* . . . “Logic is wholly concerned in the use of language.”†

“All reasoning,” says the author again, “rests on the one simple principle, that what is predicated, either affirmatively or negatively, of a term distributed, may be predicated in like manner of any thing contained under that term.” . . . “Whatever the subject matter of an argument may be, the reasoning itself, considered by itself, is in every case the same process; and if the writers against logic had kept this in mind, they would have been cautious of expressing their contempt of what they call ‘syllogistic reasoning,’ which is in truth *all* reasoning; and, instead of ridiculing Aristotle’s principle for its obviousness and simplicity, would have perceived that these are in fact its highest praise—the easiest, shortest, and most evident theory, provided it answer the purpose of explanation, being ever the best.”

The archbishop, however, nearly makes a complete shipwreck of this doctrine, so decidedly laid down. On the nature of sophisms, he says, “It is to be observed, however, that in all correct reasoning the premises virtually imply the conclusion; so that it is not possible to make precisely the distinction between the fallacy in question (the *petitio principii*) and fair argument.”

Archbishop Whately’s account of induction is as follows:—“Logic takes no cognisance of *induction* for

* Elem., p. 56.

† Ibid., p. 74.

instance, or of *a priori* reasoning, &c., as distinct *forms* of argument; for when thrown into the syllogistic form, and when letters of the alphabet are substituted for the terms (and it is thus that an argument is properly to be brought under the cognisance of logic), there is no distinction between them; *e. g.*, ‘a property which belongs to all horned animals; rumination belongs to these; therefore to all.’ This, which is an inductive argument, is evidently a syllogism in Barbara. The essence of an inductive argument (and so of the other kinds which are distinguished from it) consists, not in the *form of the argument*, but in the relation which the *subject matter* of the premises bears to the conclusion.”—(P. 110.) And again:—“In the process of reasoning by which we deduce, from our observation of certain known cases, an inference with respect to unknown ones, we are employing a syllogism in Barbara with the major premiss suppressed; that being always substantially the same, as it asserts that ‘what belongs to the individual or individuals we have examined, belongs to the whole class under which they come.’”—(P. 216.)

By the advocates for strictly formal logic, the archbishop has been charged with deviating from their, and even his own principles, by assigning certain offices to the syllogism which are entirely foreign to its nature. He observes, “It belongs exclusively to a syllogism, properly so called (*i. e.*, a valid argument so stated that its conclusiveness is evident from the mere *form* of the expression), that if letters, or any other unmeaning symbols, be substituted for the several terms, the validity of the argument shall still be evi-

dent." The following statements are, however, in direct opposition to this doctrine:—"Should there be *no sign* at all to the common term, the quantity of the proposition (which is called an *indefinite* proposition) is ascertained by the *matter*; that is, the nature of the connexion between the extremes, which is either *necessary*, *impossible*, or *contingent*." It is contended, that by here admitting the *matter* of a syllogism as an element of its argumentative conclusiveness, the entire principle of formal logic is surrendered. A, B, and C, it is said, know nothing whatever of what is necessary, impossible, or contingent.

We regret we cannot enter more fully into the merits of the *Elements of Logic*. Particular views of the author's system, as a whole, will fall in our way as we proceed to notice other recent logical publications. We cannot, however, refrain from giving a sentence or two from the pen of Sir William Hamilton, published a few years after the appearance of the archbishop's treatise:—"The work, indeed, never transcends, and generally does not rise to the actual level of the science; nor, with all its ability, can it justly pretend to more than a relative and local importance. Its most original and valuable portion is but the insufficient correction of mistakes touching the nature of logic, long exploded, if ever harboured, among the countrymen of Leibnitz, and only lingering among the disciples of Locke."*

There were several writers on logic immediately followed Dr Whately, whose treatises may be consulted with advantage. Among the number, we may mention

* Edin. Rev., 1833.

Introduction to Logic (1827), by the Rev. Samuel Hinds; *Questions on Aldrich's Logic* (1829); *An Examination of some Passages in Dr Whately's 'Elements,'* by G. C. Lewis, Esq.; and *Outline of a New System of Logic* (1827), by G. Bentham, Esq.

Though not assuming the shape of a regular treatise, we feel bound to give a formal notice of Sir William Hamilton's article on several logical publications, in the *Edinburgh Review* for April 1833. This paper has had no small degree of influence over logical speculations in this country since its appearance; and on this account, as well as for its intrinsic merits, we feel justified in giving a brief and passing summary of the chief points discussed in the article in question, for the especial use and guidance of those who feel an interest in the subject. This periodical communication forms, in fact, a distinct landmark in the modern history of logic.

The learned author gives a brief sketch of the state of logical science in Scotland, Cambridge, Oxford, and Dublin. He then commences to notice Dr Whately's *Logic*, and the treatises of several other logicians, pointing out, as he proceeds, some of the chief errors into which they have respectively fallen. Sir William's remarks on the question, whether logic be a *science* or an *art*, or both, are entitled to especial notice. He lays down the position, that the *laws of thought*, and not the *laws of reasoning*, constitute the proper objects of logical science. On the real nature and intrinsic value of Aristotle's purely logical works, there are many important statements given by the able critic.

Sir William denies that the schoolmen were ever guilty of attempting to employ logic for the purpose of physical discoveries—an accusation often made against them, but without any solid foundation whatever. “Logic is a formal science; it takes no consideration of real existence, or of its relations, but is occupied solely about that existence and those relations which arise through, and are regulated by, the conditions of thought itself. Of the truth or falsehood of propositions in themselves, it knows nothing, and takes no account; all in logic may be held true that is not conceived as contradictory. In reasoning, logic guarantees neither the premises nor the conclusions, but merely the *consequence* of the latter from the former; for a syllogism is nothing more than the explicit assertion of the truth of one proposition, on the hypothesis of other propositions being true in which that one is implicitly contained. A conclusion may thus be true in reality (as an assertion), and yet logically false (as an inference).” The truth or falsehood being extra-logical, so likewise is the modality of the syllogism. The syllogistic inference is always necessary; it comes under no extra-formal condition, but is equally apodictic in contingent as in necessary matter.”

Our critic, after having disposed of some minor matters, proceeds to examine some positions relative to categorical, hypothetical, and disjunctive syllogisms, and the enthymeme, and lays down several important rules relative to their nature and application. On the use of the terms *induction* and *deduction*, and of their correct philosophical meaning, we have many excellent

and profound critical remarks. This part of Sir William's critique is by far the most acute and most ably argued.

If any proof were wanting of the opposite and irreconcilable opinions men entertain at the present day of logical science, it would be furnished by a reference to the *New System of Logic* (1839) of Mr Bosanquet. Here we have the scholastic dogmatists of all shades set at nought, and their entire system considered little better than a piece of gross and mischievous delusion.

The author tells us that the Aristotelian logic, taken as a whole, is manifestly inconsistent with a Divine revelation, because it adopts a style of reasoning altogether opposed to its special character and offices. For this chief reason, the existing systems of logic, which are founded upon it, ought to be set aside, and a more rational and perfect one substituted in its stead. The Grecian dialectics being of heathen origin, they weaken the proper tone of the mind, run counter to Christian principle, and give a wrong direction to those processes of analysis and reasoning, called into requisition in all theological investigations and researches. "The mind which has been trained and formed in the schools of Grecian wisdom, *cannot* see the truths of Christianity. To the Greeks they must still be foolishness."*

As Aristotle's logic is one of the main supports of this heathen system, the author's object is to refute its chief principle, the syllogism, and display its utter incompetency to accomplish what it professes to perform. This logic, the author maintains, is founded on

* Logic, p. 10.

a false principle; inasmuch as it commences with a division of the operations of the mind, the proper subjects of which are thoughts and ideas; and then it abruptly passes on to language, which is a very imperfect means of representing them. The consequence of this is, that the logic does not treat of thoughts and ideas, but only gives us rules for the use of language—an imperfect substitute for an instrument which is itself imperfect. Besides, the division of the intellectual operations is absurdly imperfect. The distinction made between judgment and reasoning is without any foundation. Judging and reasoning, for logical purposes, are one and the same thing. In order to support the Aristotelian division, “the whole province of judgment is made to consist in the mechanical use and estimate of such forms of words as convey a simple affirmation or negation; being, it is true, by a fortuitous and figurative coincidence of language, an expression of the ‘judgment,’ or ‘sentence’ of the reasoning faculty; not at all, however, the operation of judgment and reasoning itself.”* The Aristotelian logic, therefore, “leaves the whole faculty of judgment without use or office, except in so far as it is employed in drawing the conclusion from the syllogism—an operation which it performs professedly by virtue of the mere form of words, and not by the full exercise of that discretion to which the term is properly applied, and which is chiefly requisite, in the use of this system, to form and arrange the premises. This division, therefore, is wholly specious, and falls to the ground.”

Mr Bosanquet affirms, that the syllogism is to the

* P. 3.

processes of reasoning what language is to ideas. It is an imperfect instrument, and used for the purpose of representing these processes rapidly and compendiously.

Mathematical reasoning is like every other kind of reasoning, with the exception of its subject-matter. This distinguishes a mathematical argument from every other. The author likewise maintains, that propositions in this science cannot be reduced to the syllogistic form, "except only by distant and figurative approximation. For every mathematical syllogism would have four terms in it, instead of three; namely, the two terms which are compared, the term of comparison, and the term of equality or proportion; for the substitution of the term '*greater,*' or '*equal to,*' for the only legitimate logical link or copula '*is,*' at once removes it beyond the application and principles of logic."*

Mr Bosanquet differs from Mr Locke as to the abstract character of knowledge in general. He considers that Locke's notion, that the perception of the agreement of ideas constitutes knowledge, is entirely erroneous. Neither does truth consist in the joining of signs, according to their actual agreement. These are pronounced as pure chimeras. Ideas themselves are knowledge, whether of a simple or compound character. Opinion is the attaching these ideas to real things; and truth is the actual agreement of these ideas and opinions with realities. "The idea of colour is knowledge. The idea of pleasure and of pain is knowledge. The idea of heat is knowledge. The idea of pain following or accompanying heat also is know-

* P. 45.

ledge. The agreement of this idea with reality and experience is truth. In like manner, the ideas of virtue and of duty are knowledge. The idea of God is knowledge. The idea of God rewarding us for the performance of our duty in a future life is knowledge.”*

The *Lectures on Logic* (1838) by Francis W. Newman, display an intimate and correct knowledge of logical subjects, and contain many acute and valuable remarks on the science of reasoning generally. He tells us, that “the object-matter of logic is no particular set of phenomena parallel in character to that which other sciences contemplate, but is *proof* or *evidence*, as such. And in discussing evidence, the end in view is to investigate the laws of evidence—to lay down when and why it is that we say a thing has been proved; its evidence is good; it is therefore to be believed.” “I conceive it is a part of logic to inquire, both why we believe our *senses*, and why we believe *human testimony*.”

Mr Newman throws an air of originality over every thing he discusses. The reader will find this observation borne out by a reference to his remarks on definition, analogy, cause and effect, and induction.

We shall now make a few remarks illustrative of Mr Stuart Mill’s *System of Logic, Ratiocinative and Inductive* (1843). From the voluminous and varied character of the work, we can do little more than merely advert, and that very briefly indeed, to a few of the leading principles on which the author’s peculiar theory of reasoning is founded.

* P. 112.

Mr Mill says, that “Logic comprises the science of reasoning, as well as an art founded on that science;” and he then goes on to shew the various meanings, both scientific and popular, which are attached to the word *reasoning*. He comes, however, to the conclusion, “that the province of logic will include several operations of the intellect not usually considered to fall within the meaning of the terms—reasoning and argumentation.” He says again, “The sole object of logic is the guidance of one’s own thoughts.” “Logic takes cognisance of all intellectual operations only as they conduce to our own knowledge, and to the command of that knowledge for our own uses.” The art of communicating knowledge to others, Mr Mill refers to rhetoric, to which, he conceives, it rightly belongs.

It will tend greatly to give an insight into the entire scope and drift of Mr Mill’s system of logic, to premise, at the outset, that there are two important doctrines which lie, as it were, in the background of all his reasonings and discussions on the principles of logical science, and to which he seems indissolubly wedded;—namely, the theory of causation, developed by Hume, and illustrated by Dr Brown; and the doctrine of the association of ideas, maintained by Hartley, Priestly, and others. Upon those two principles or theories, or whatever they may be called, Mr Mill takes his stand, under a firm persuasion that no one has the power to dislodge him from his fancied security.

In accordance with the general philosophy embodied in these two theories of our mental nature, Mr Mill speaks of truth in these words:—“Truths are known

to us in two ways; some are known directly, and of themselves; some through the medium of other truths. The former are the subject of intuition or consciousness; the latter of inference. The truths known by intuition are the original premises from which all others are inferred." This brings us by a short route to the source of all truth, consciousness or feeling—the same conclusion on which Dr Brown's logical theory rests.

The first chapter of Mr Mill's first volume is chiefly occupied with discussions on the nature of language, and its connexion with various kinds of propositions. Mr Mill is a nominalist, and views the offices which words perform in our reasoning, in strict conformity with the canons laid down in the verbal school of thinking. There are, however, in this division of the work, many excellent and profound observations, not to be met with in other treatises on logical science.

In the second chapter we come to *ratio-cination*, or the syllogism, with the formal rules of which the author enters to some limited extent. He tells us in his preface, in reference to the syllogistic logic generally, that "the scientific theory on which its defence is usually rested, appears to him erroneous." He gives his reasons for this in the part of his work now under consideration. The reader will find some excellent matter here; and we regret exceedingly that want of space forbids our giving even an outline of all the arguments adduced against the scientific validity and value of the syllogism. All we can do is to cull out a passage or two at random. "It must be granted," says Mr Mill, "that in every syllogism, con-

sidered as an argument to prove the conclusion, there is a *petitio principii*. When we say, ‘All men are mortal; Socrates is a man; therefore Socrates is mortal’—it is unanswerably urged by the adversaries of the syllogistic theory, that the proposition, Socrates is mortal, is presupposed in the more general assumption, All men are mortal; that we cannot be assured of the mortality of all men, unless we were previously certain of the mortality of every individual man; that if it be still doubtful whether Socrates, or any other individual you chose to name, be mortal or not, the same degree of uncertainty must hang over the assertion, All men are mortal; that the general principle, instead of being given as evidence of the particular case, cannot itself be taken for true without exception, until every shadow of doubt which could effect any case comprised with it, is dispelled by evidence *aliunde*; and then what remains for the syllogism to prove? That, in short, no reasoning from generals to particulars can, as such, prove any thing; since from a general principle you cannot infer any particulars, but those which the principle itself assumes as foreknown.” . . . “This doctrine is irrefragable.”*

“Archbishop Whately has contended, that syllogising, or reasoning from generals to particulars, is not, agreeably to the vulgar idea, a peculiar *mode* of reasoning, but the philosophical analysis of *the* mode in which all men reason who reason at all. With the deference due to so high an authority, I cannot help thinking that the vulgar notion is, in this case, the more correct. If from our experience of John, Thomas, &c., who

* Vol. i. p. 243.

once were living, but are now dead, we are entitled to conclude that all human beings are mortal, we might surely, without any logical inconsequence, have concluded at once from these instances that the Duke of Wellington is mortal. The mortality of John, Thomas, and Company, is, after all, the whole evidence we have for the mortality of the Duke of Wellington. Not one iota is added to the proof by interpolating a general proposition." . . . "Not only *may* we reason from particulars to particulars, without passing through generals; but we perpetually do so. All our earliest inferences are of this nature. From the first dawn of intelligence we draw inferences; but years elapse before we learn the use of general language."

Leaving the doctrine of the syllogism, and passing over much excellent discussion on *Trains of Reasonings* and the *Deductive Sciences*, we come to another leading branch of Mr Mill's logic, that of *Induction*; the theory of which is as follows:—All inference is of a decidedly inductive character, and rests upon the great principle of the association of ideas. One event A, is a mark or sign of another event B; for this sole and simple reason, that A and B have been conjoined in our experience: we have seen the one follow the other. Reasoning by induction is, therefore, just the recording of the connexion (of whatever nature that may be) subsisting among particular objects or events; the mind goes from one particular thing to another particular thing, without the intervention of any general or formal proposition whatever. When we refer an individual thing or object to a collection, a class, or assortment of other objects or events, either from a

principle of resemblance, or from a frequency of conjunction, this collection, class, or assortment, is considered by the mind as a single or individual thing; whether it be, in fact, composed of only two units, or two millions of units. The totality of its character is never broken or impaired; it is still, in the mind's eye, one particular and individual object or event. Mr Mill says, "If reasoning be from particulars to particulars, and if it consists in recognising one fact as a mark of another, or a mark of a mark of another, nothing is required to render reasoning possible except senses and association—senses to perceive that two facts are conjoined; association, as the law by which one of these two facts raises up the idea of the other. For these mental phenomena, as well as for the belief or expectation which follows, and by which we recognise as having taken place, or about to take place, that of which we have perceived a mark, there is evidently no need of language. And this inference of one particular fact from another, is a case of induction. It is of this sort of induction that brutes are capable; it is in this shape that uncultivated minds make almost all their inductions, and that we all do so in the cases in which familiar experience forces our conclusions upon us, without any active process of inquiry on our part, and in which the belief or expectation follows the suggestion of the evidence, with the promptitude and certainty of an instinct."*

This, in few words, is the sum total of the author's theory of inductive logic. It is simply the observing of one event following another; which act of observing

* Vol. ii. p. 238.

resolves itself into pure consciousness or feeling; or, to speak more strictly, it is nothing but this consciousness or feeling itself. This law of antecedent and consequent gives rise (*query*, how?) to a certain rule of judging, or of calculating probable events or circumstances; but the law can never give any thing approaching to infallible certainty that any event, or series of events, will actually take place. It is only probable evidence which we have to deal with in inductive philosophy; which, says Mr Mills, is founded on this rule: "Certain individuals have a given attribute; an individual or individuals resemble the former in certain other attributes; therefore they resemble them also in the given attribute."

We shall now make a remark or two on this theory of reasoning.

Mr Mill has a deep and singular abhorrence of any thing being considered binding on the minds of men to believe. His scheme will admit of no mental compulsion or dictation. He cannot tolerate any who "adduce as evidence of the truth of fact in external nature, any necessity that the human mind may be conceived to be under of believing it." His whole inward man rises up in open rebellion against an act of such licentious and unbridled authority. But let us see, by his own system, how he stands in reference to this necessity of believing. The law of association, that is, the law by which A suggests B, is the only law of an intellectual cast which enters into his inductive theory. It is the only law which he thinks necessary or adequate to produce the effects he describes. Is this law *compulsory*? Does it imply a *necessity* of be-

believing *any thing*? Is it quite optional with us whether we attend either to antecedents or consequents, or pin the slightest degree of faith upon either or both? Surely there is something very like an *internal necessity* to believe what this associating law of antecedent and consequent is said to teach us. It must be borne in mind, that Mr Mill has here left us no choice in the matter; for he points out no other law but this law of association, by which the reality of that which he himself calls knowledge can be substantiated. If we are under no necessity whatever of believing any thing upon the power or authority of this law, it must be a law without authority, and by whose voice his own system cannot be sustained, as one having the smallest particle of evidence or certainty attached to it. With all due deference, we conceive Mr Mill is bound, for the credit of his own theory, to place this matter upon a more satisfactory basis.

With respect to the nature of mathematic evidence, a subject which forms a conspicuous element of discussion in several sections of his work, Mr Mill maintains the position, that it is decidedly of an experimental character, and by no means what is termed necessary or intuitive. "What is the ground," he asks, "of our belief in axioms? What is the evidence on which they rest? I answer, they are experimental truths; generalizations from observation. The proposition, 'Two straight lines cannot inclose a space; or, in other words, Two straight lines which have once met, do not meet again, but continue to diverge,' is an induction from the evidence of our senses." The author also affirms, that arithmetical science is a science of expe-

rience and observation. “The fundamental truths of that science all rest upon the evidence of sense; they are proved by shewing to our eyes and our fingers, that any given number of objects,—ten balls for example may,—by separation and re-arrangement, exhibit to our senses all the different sets of numbers, the sum of which is equal to ten.”

On the categories of Aristotle Mr Mill remarks: “The imperfections of this classification are too obvious to require, and its merits are not sufficient to reward, a minute examination. It is a mere catalogue of the distinctions rudely marked out by the language of familiar life, with little or no attempt to penetrate, by philosophic analysis, to the *rationale* even of these common distinctions.” He gives us *four* categories of his own, which he conceives embrace all nameable things. 1st, Feelings, or states of consciousness. 2d, The minds which experience those feelings. 3d, The bodies or external objects which excite certain of those feelings, together with the powers or properties whereby they excite them. And 4th, The successions and co-existences, the likenesses and unlikenesses, between states of consciousness.

We should have liked to have examined Mr Mill's theory of causation; but we are compelled to cut short our observations on his work. We venture to affirm, however, that in our humble opinion this is a very unsound part of his system. It is ill reasoned, and presents flagrant inconsistencies and contradictions at every turn. We are fully aware that he was under the necessity of adopting and carrying out these views on cause and effect, in order to impart a semblance of

unity to his entire theory ; which, being of an entirely material character, could admit no spiritual or purely mental element to come in contact with it. But we feel confident that when the question as to causation is dispassionately examined, and upon strictly philosophical grounds, it will be found that there is a principle implanted in human nature, of steady and unerring operation, that refers every true cause to some power, faculty, or mental influence. This position, we conceive, is as susceptible of complete demonstration as any thing in the whole circle of human knowledge can manifest.

Among the number of English writers on the philosophical principles of logical science, we must include Mr Hallam, who, in his *Introduction to the Literature of Europe*, has entered into the subject, not only as a commentator on writers on logic generally, but as an original thinker on some of the main points connected with modern controversies on the nature of the reasoning process. Mr Hallam's opinions are of very recent date (1847), and are entitled to attentive consideration, both from his unquestionable learning and dispassionate judgment. The passage we are about to quote, though somewhat long, is valuable ; because it contains his matured and settled opinions on the nature and utility of the syllogistic theory, now a general topic of interest and discussion.

Mr Hallam observes, " It by no means is to be inferred, that because the actual text of Bacon is not always such as can be well understood by very young men, I object to their being led to the real principles of inductive philosophy, which alone will teach them to

think, firmly but not presumptuously, for themselves. Few defects, on the contrary, in our system of education, are more visible than the want of an adequate course of logic; and this is not likely to be rectified, so long as the Aristotelian methods challenge that denomination, exclusively of all other aids to the reasoning faculties. The position, that nothing else is to be called logic, were it even agreeable to the derivation of the word, which it is not, or to the usage of the ancients, which is by no means uniformly the case, or to that of modern philosophy and correct language, which is certainly not at all the case, is no answer to the question, Whether what *we* call logic does not deserve to be taught at all?

“A living writer of high reputation, who has at least fully understood his own subject, and illustrated it better than his predecessors, from a more enlarged reading and thinking, wherein his own acuteness has been improved by the writers of the Baconian school, has been unfortunately instrumental, by the very merits of his treatise on logic, in keeping up the prejudices on this subject, which have generally been deemed characteristic of the university to which he belonged. All the reflection I have been able to give to the subject, has convinced me of the inefficacy of the syllogistic art in enabling us to think rightly for ourselves, or, which is part of thinking rightly, to detect those fallacies of others which might impose on our understanding before we have acquired that art. It has been often alleged, and, as far as I can judge, with perfect truth, that no man who can be worth answering ever commits, except through mere inad-

vertence, any paralogisms which the common logic serves to point out. It is easy enough to construct syllogisms which sin against its rules; but the question is, By whom were they employed? For though it is not uncommon, as I am aware, to represent an adversary as reasoning illogically, this is generally effected by putting his argument into our own words. The great fault of all, over-induction, or the assertion of a general premiss upon an insufficient examination of particulars, cannot be discovered or cured by any *logical* skill; and this is the error into which men really fall, not that of omitting to *distribute the middle term*, though it comes in effect, and often in appearance, to the same thing. I do not contend that the rules of syllogism, which are very short and simple, ought not be learned; or that there may not be some advantage in occasionally stating our own argument, or calling on another to state his in a regular form (an advantage, however, rather dialectical, which is, in other words, rhetorical, than one which affects the reasoning faculties themselves); nor do I deny that it is philosophically worth while to know, that all *general reasoning by words* may be reduced into syllogism, as it is to know that most of plane geometry may be resolved into the superposition of equal triangles; but to represent this portion of logical science as the whole, appears to me almost like teaching the scholar Euclid's axioms and the axiomatic theorem to which I have alluded, and calling this the science of geometry. The following passage from the Port-Royal logic is very judicious and candid, giving as much to the Aristotelian system as it deserves:—‘That part of which we

now have to treat, and which comprehends the rules of reasoning, is regarded as the most important in logic, and is almost the only one which has been treated of with any care. But it may be doubted whether it is really as useful as it has been supposed to be. The greater part of the errors of men, as we have already said elsewhere, arises much more from their reasoning on false principles, than from their reasoning wrongly on their principles. It rarely happens that men allow themselves to be deceived by reasonings which are false, only because the consequences are ill deduced; and those who are not capable of discovering such errors by the light of reason alone, would not commonly understand the rules which are given for this purpose, much less the application of them. Nevertheless, considering these rules simply as speculative truths, they may always be useful as mental discipline; and, further than this, it cannot be denied that they are of service on some occasions, and in relation to those persons who, being of a lively and inquiring turn of mind, allow themselves at times, for want of attention, to be deceived by false consequences, which attention to these rules would probably rectify.' How different is this sensible passage from one quoted from some anonymous writer in Whately's *Logic*, p. 34:—'A fallacy consists of an ingenious mixture of truth and falsehood, so entangled, so intimately blended, that the fallacy is, in the chemical phrase, held in solution; *one drop of sound logic* is that test which immediately disunites them, makes the foreign substance visible, and precipitates it to the bottom.' One fallacy, it might be answered, as com-

mon as any, is the *false analogy*, the misleading the mind by comparison, where there is no real proportion or resemblance. The chemist's test is the *necessary* means of detecting the foreign substance. If the 'drop of sound logic' be such, it is strange that lawyers, mathematicians, and mankind in general, should so sparingly employ it—the fact being notorious, that those most eminent for strong reasoning powers are rarely conversant with the syllogistic method. It is also well known, that these 'intimately blended mixtures of truth and falsehood,' perplex no man of plain sense, except when they are what is called *extra-logical*—cases wherein the art of syllogism is of no use."

Oxford, for the last fifteen years, has taken a leading part in the cultivation and extension of logical science. Mr Huyshe's work on the subject (1833) contains many valuable and acute observations on the principles of reasoning generally. But, in our humble opinion, Mr Chrétien's *Essay on Logical Method* (1848) is by far the most philosophical treatise which has hitherto appeared from this venerable seminary of learning. The grand aim of the work is to shew the connexion of logical methods with science in general. In the preliminary parts of the treatise, the author gives us the view which the ancient logicians took of the connexion of method with scientific knowledge; the opinions which the scholastic reasoners entertained on the matter; and then, lastly, the discussions of modern philosophers on the subject. In every part of this extended inquiry, we see displayed a perfect knowledge of logical history, and a philosophical spirit of

the highest and most genial kind—genial in all that is elevating, noble, and improving.

In reference to logical method generally, Mr Chretien observes: “Logic is no part of philosophy; or, in other words, it is not a science. The student of pure logic has, as such, no more speculative knowledge on any particular subject of investigation, when he concludes his course, than when he began it. The basis of logic may shew through, indeed, and so some insight into metaphysics be gained; or its application, by way of example, may inform him of physical truths, before unknown, as the case may be, in art, or morals, or theology. But this does not really effect its proper nature as a system of rules, implying previous knowledge, and ministering to its further attainment, but of little value in themselves as theoretic truths, and even assuming an imperative form more naturally than that of a proposition.”*

The author divides logical method into three distinct branches; the method of science, art, and of practical evidence. All science is made up of general conceptions of the mind; and the grouping of several of these conceptions together under one idea, constitutes a science. And the same thing may be applied to method, when considered in reference to the fine arts, and to the nature and application of practical evidence of every kind and degree. For the full illustration of this subject, we must refer to the author's work itself.

→ The following general observations on the nature of the verbal school of logic, must conclude our notice of this able treatise:—“It is much to be regretted, that

* P. 128.

so many symptoms of an adhesion to the opinions of this moderate section of the verbal school, are to be found in the able treatise of Archbishop Whately. His definition of logic, as the 'art of employing language properly for the purpose of reasoning,' is conceived quite in this spirit. To trace this evil tendency in detail through his work, would be quite foreign to our present purpose. Two of the more general features may, however, be mentioned here, as illustrative of the turn of mind with which this logical theory is associated. In the first place, he is led to attach far too much importance to the mere arrangements of words, and to measure the elasticity and pliability of thought by that of the raw material out of which its finished representations are fabricated. The most striking instance of this defect is found in his way of treating hypothetical and inductive arguments. He compels methods of reasoning, which, when viewed in the thinking mind, are clearly distinct from the deductive process and from each other, to bow to an artifice of language, and submit to the one unvarying formula of syllogism. And, secondly, he shews a continual disposition to underrate the number of real questions at issue among mankind, and to increase in proportion the number of merely verbal differences. His common way of dealing with contending disputants, is to accuse them of an equivocation, to assure them that they either mean the same thing by different words, or use the same words to signify distinct things. Or, if this plan will not succeed, he looks for some formal error in the argument of one of the parties, and is ready to assign the discrepancy to any cause except

that which is really probably the real one—some broad difference of principle underlying the whole discussion, and forcing, as it were, the superficial strata of thought from what would be else their level and unbroken direction. This is in fact to assume, that men can with equal ease be made to be of one mind and of one vocabulary.

“The truth is, that the minds of men differ in actual constitution as widely as their bodies. As we do not all spontaneously move our limbs in the same manner, so neither do we think alike. When discipline makes men uniform and simultaneous in their motions, it only suspends their natural peculiarities, and does not destroy them. Though the effect of the drill-sergeant’s labours may be observable when the soldier is off parade, they no longer produce an exact uniformity. Those differences of gait and bearing then display themselves once more, which at the time seemed obliterated.”

Mr Moberly’s *Lectures on Logic* (1848) is a work of considerable merit. He divides the science of logic into two branches; the first considers the *forms* of reasoning; and the second makes clear the *method* of their application. The author expresses a hope, that the Latin manual of Aldrich “may still be retained in our (Oxford) university, without much actual alteration of the text, but vivified and made practical by continual increase of knowledge, as to both the forms of reasoning and their matter.”

Mr Mansel’s work on logic (1849), is another Oxford publication of fair reputation and importance. He is inclined to think, that the benefits derivable

from logic are of a secondary, and not of a primary character. He says, "It is not intended to deny the usefulness of logic; but it may safely be asserted, that its more valuable fruits are to be found in the training which the mind unconsciously receives, rather than in the conscious employment of knowledge in the formation and examination of reasonings, and that both, in respect of the true character of the science, are secondary and accidental results, not primary and essential features."*

Mr Thomson's *Outline of the Necessary Laws of Thought* (1849), is another Oxford publication, of a profound and scientific character. His categories of the rational understanding are quantity, quality, relation; and relation he resolves again into time, space, causation, composition, agreement and repugnance, polar opposition of finite to infinite. The author considers logic as a science rather than an art, that it is the science of the necessary laws or forms of thought, and has thought rather than language for its object-matter.

While Oxford has been displaying of late so much zeal and well-directed labour in the field of logical science, Cambridge has not been altogether idle. Mr Soly's work is highly spoken of; and Mr De Morgan's *Formal Logic* (1847), is a treatise of acknowledged ability. The chapter on Probabilities, and that on Fallacies, are the two most interesting in his book. Mr Boole's *Mathematical Analysis of Logic* (1848), is an attempt to resolve the ordinary proposition and syllogism to such a form as will admit of the application of symbolical notation. We regret that his system

* *Artis Log. Rud.* Oxford, 1849.

requires more attention to matters of detail than we can now devote to it.

In Scotland we have recently had Mr Leechman's *Logic* (1847), and Mr Munro's *Manual of Logic* (1850), both good works of their kind, and embodying many acute and valuable observations on logic, viewed as a philosophical instrument.

Mr Bayne's *Essay* (1850) we have already alluded to in connexion with Sir William Hamilton's system of logic. We subjoin the following letter which appeared in the *Athenæum* of 21st December last, on the subject to which the work especially refers:—

“*Quantification of the Predicate.*—I trust you will oblige me by giving insertion to the following remarks on the discovery of the doctrine of a thorough-going quantification of the predicate by Sir W. Hamilton:—Having lately perused Mr Bayne's *Essay* on the new analytic of logical forms, it occurred to me that I had long since seen the same doctrine advanced and carried quite as far in a work on logic which I rather think fell still-born from the press. The work in question was published in the year 1827, under the title of *An Outline of a New System of Logic*, with a critical examination of Dr Whately's *Elements of Logic*, by George Bentham, Esq. It is strange that the title of this book never attracted the attention of the Edinburgh professor of logic, and is not mentioned in the *Historical Notice touching the Quantification of the Predicate*, appended to Mr Bayne's *Essay*. I invite logicians carefully to examine chapters eight and nine of Mr Bentham's *Outline*, and to compare the views therein

contained with the pages of the above-named *Essay*, and then to state in what respect they fall short of Sir W. Hamilton's doctrine. The *Outline* was evidently written in haste and for a temporary purpose. Moreover, it contains many errors; but in it the principle 'of a thorough-going quantification' is as clearly laid down and carried into practice as it is in the essay which so ably expounds the doctrine of Sir W. Hamilton. Unfortunately, the author has never since furnished us 'with a summary of his more matured views.' I should not have spoken of the quantification of the predicate as a discovery, but for the following passage in Mr Bayne's *Essay*:—'We cannot, however, close, without expressing the true joy we feel, that in our country, and in our time, this discovery has been made.'—I am, &c. W. WARLOW."

"HAVERFORDWEST."

The logical literature of the United States is not of any great or original value. It has, however, been cultivated with some zeal within the last half-century. Levi Hedge, of Harvard College, published his *Elements of Logic* (1816), a work founded on the *common sense* views of Reid and Stewart. The subject is divided into three branches. In the first the author gives an account of the various powers or faculties of the mind; in the second, he discusses the nature of general terms and propositions; and in the third, he points out those intellectual instruments more immediately engaged in the operation of reasoning or argumentation. "Inductive reasoning," says the author, "is founded on the belief that the course of nature is based on uniform laws,

and that things will happen in future as we have observed them to happen in times past. We can give no proof of a permanent connexion between any events, or between any two qualities either of body or of mind. The only reason for supposing such a connexion in any instance is, that we have invariably found certain things to have been conjoined in fact; and this experience, in many cases, produces a conviction equal to that of demonstration." (P. 61.)

The *Elements of Logic* (1840) of Charles K. True, of Boston, is a treatise of considerable talent. His definition of logic is, that it is the science of enabling us to discover truth, and communicate it to others. That part of the work devoted to the consideration of general propositions, general terms, and the principles of induction, are the most interesting and useful.

Henry P. Tappan's *Elements of Logic* (1844) contain, independent of logical matters, an introductory view of the philosophy of mind generally. Logic is treated of in the eleventh section of the first part, and is founded on the German transcendental philosophy.

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A LIST OF WORKS ON LOGIC,

ALPHABETICALLY ARRANGED.

A

- ABICHT (Joh. Heinr.), Philosophie der Erkenntnisse. *Bayr.*, 1791.
Idem, Von dem Nutzen und der Einrichtung eines zu Logischen Uebungen bestimmten Collegium. *Leipsic*, 1790.
Idem, Verbesserte Logik oder Wahrheits, &c. *Fuerth.*, 1802.
Idem, Anleitung und materialien zu einem Logisch-practischen Institute. *Erlangen*, 1796.
- ACADEMIE LOVANIENSIS Commentaria in Isagogen Porphyrii, et in omnes libros Aristotelis de dialectica. *Lov.*, 1568. Fol.
- ACEVEDO, Dialectica et Logica. *Madrid*, 1563.
- ACKERSDYCK (Corn. ab), Logica. Traj. ad R. 1666.
- ACONTIUS (Jac.), De methodo, sive de recta investigandarum tradendarumque artium ac scientiarum ratione. *Basil*, 1558.
- AGRANA (Nicol.), Disquisitiones in V. Porphyrii universalialia. *Franc.*, 1601.
- AGRICOLA (Rudolphus), De dialectica inventione, libri III. *Colon.*, 1527; *Paris*, 1554.
- ALCUINUS sive ALBINUS FLACCUS, Dialectica et grammatica. *Ingolst.*, 1604.
- ALBERTUS MAGNUS, Opera ad logicam pertinentia. *Venet.*, 1494.
Idem, Commentaria in IV. libros logicæ Aristot. *Colon.*, 1490. Fol.
Idem, Epitomata sive reparationes logicæ veteris et novæ Aristot. *Col.*, 1496. 4to.
Idem, Commentaria in Isagogen Porphyrii, et in omnes libros Aristot. de vetere logica. *Col. Agr.*, 1494. Fol.
- ALDRICH, Artis Logicæ Comp. *Oxford*, 1846.

- ALEMANUS (Ad.), De optimo genere disputandi, libri III. *Paris*, 1546.
- ALER (P. Paul.), Dialectica nova. *Trev.*
- Idem*, Logica. *Colog.*, 1710.
- ALEXANDER, Aphrod. in pr. anal. Aristot. comment. *Venet.*, 1520.
- ALGAZELI (Abou Ham Mohammed), Philos. et Logica. *Colog.*, 1506.
- ALMEIDA (D. Teodoro de), Elementos de Logica. *Madrid*, 1847.
- ALPHONSUS DE CORDUBA, Principia Dialectices.
- ALPHONSUS DE PRADO, Quæst. Dialect.
- ALPHONSUS DE VERACRUZ, De Topicis Dialect.
- ALSTEDIUS (Jo. Henr.), Logicæ systema harmonicum. *Herborn. Nassov.* 1614–1623.
- Idem*, Nucleus logicæ. *Herb.* 1623.
- Idem*, Theatrum scholasticum. *Ed. alt. Herb.* 1620.
- Idem*, Compendium lexicæ philosophici. *Herbornæ*, 1626.
- ALVARADUS (Alp.), Ars disserendi ac dicendi, lib ii. *Basil*, 1600.
- AMMONIUS HERMEAS, Comment. in Aristotelis, &c. Gr. *Venet.*, 1545.
- Idem*, Comment. in Aristotelis librum de interpretatione. Gr. *Venet.*, 1545.
- ANCILLON, Mémoire sur la certitude, et en particulier sur la nature de la certitude humaine. *Mém. de l'Acad. de Berlin.* 1792, 1793.
- Idem*, Doute sur les bases du calcul des probabilités. *Ib.*, 1794–1795.
- ANDREA (Antoninus), Questiones in Aristotelis Logicam. 1489.
- ANEPONYMUS (Georg.), Compendium philosophiæ sive organi Aristotelis. Gr. et Lat. *Aug. Vind.*, 1600.
- ANGEST (H.), Problemata logicalia. *Par.*, 1507 et 1511.
- ANTONIUS (Coronel), Quæst. Logicæ.
- ANTONIUS DE ESPINOSA, In Summulas.
- ANTONIUS (Ramirez de V.), Abbre. Parv. Logicalium.
- ANTONIUS GENUENSIS, Ars logico-critica. *Neapoli*, 1758.
- ARBOREUS, Scholia ad Predicamenta Aristotelis. *Paris*, 1582.
- Idem*, Dialectica. *Paris*, 1530 et 1536.
- ARGALL (John), Introd. ad Artem Dialecticam. *London*, 1605.
- AMESIUS (William), Demonst. Logicæ veræ. *Lugd.*, 1632.
- ARISTOTELES, Organon. *Franc.*, 1592.
- ARNAULD (Ant.), Des vraies et des fausses idées, contre ce qu'enseigne l'auteur de la recherche de la vérité. *Cologne*, 1683.
- Idem*, L'art de penser. *Paris*, 1664.
- ARNDT (Chris.), De vero usu Logices in theologia. *Rostock*, 1650.
- ARNOULT (Gatien), Programme d'un cours complet de philosophie. *Paris*, 1831.
- APACZAI (A. J.), A System of Logic. *Weissenburg*, 1636.
- AUGUSTINUS, Tractatus de dialectica. *Antv.*, 1700.
- AUGUSTINUS (Perez de Olivan), In posteri. Arist.
- AUGUSTINUS (de Sbarroia), Dialecticæ.
- AURIVILLIUS (Petr.), Principii Logicorum. 1630.
- AVERROES, Uni. res logica. *Venice*, 1560.

B

- BAADER (F.), *Fermenta cognitionis.* Berl., 1822.
- BACON (Franc.), *Op. omnia.* Amstel., 1730.; fol. 1823. *Wurtzbourg*, 1770–1789. 3 vols. 8vo.
- BAKE (Alex.), *Lessen over de Redekunde, ten dienste van jonge lieden, die de scholen hebben verlaten.* Leyden, 1828.
- BALDINOTTI, *De Recta Mentis Institutione.* 1787.
- BALDUINUS (Junius), *De tota Aristotelis Logica.* 1634.
- BALMES (Don. J.), *Logica.* Barcelona, 1850.
- BALFOUR (Robert), *Logiartia et Ethica.* Burd., 1616.
- BARBAY (Petr.), *Comm. in Arist. Logicam.* Paris, 1680.
- BARBY (Petr.), *Commentarius in Aristotelis logicam.* Lugd., 1692.
- BARDILUS (C. G.), *Grundriss der ersten Logik gereinigt von den Irrthuemern bisheriger Logiken ueberhaupt, der Kantischen insbesondre.* Stuttgart, 1800.
- Idem*, *Beytrag zur Beurtheilung des gegenwaertigen Zustandes der Vernunftlehre in einigen Bemerkungen ueber die Tieftrunk'sche und Schulze'sche Logik.* Landshut, 1803.
- BARLAAM, *Logistica.* Paris, 1594.
- BARRON (Profess.), *Lec. on the Belles Lettres and Logic*, 1806.
- BARTHOLINE (Caspar), *Natura Logicae*, 1624.
- BARNABAS (Gallego de Vera), *Controv. Logicales.*
- BASTOS (Father), *Logica.* Salamanca, 1815.
- BATESON (George), *Plain Logick for Plain Men.* London, 1702.
- BAUMEISTER (Fr. Chr.), *Institutiones philos. rationalis methodo Wolfii conscriptae.* Wittenb. 1735, ed. decima 1769, item 1798.
- Idem*, *Philosophia definitiva ex syst. Wolfii.* Wittenb., 1758 et 1789.
- Idem*, *Philosophia recens controversa.* Lips. et Gorlicii, 1749 et 1766.
- Idem*, *Logica.* Wittenb., 1780.
- Idem*, *De fallaci expectatione casuum similium.* Lips. et Gori., 1741. 4to.
- BAUMGARTEN (Alex. Gottl.), *Acroasis logica*, in Christ. L. B. De Wolf. *Halæ*, 1761.
- Idem*, *Logica.* Halle, 1773.
- Idem*, *Acroasis logica aucta et in systema redacta a J. Gott. TÄLLNERO.* Ed. ii. *Halæ*, 1773.
- BAYLE (P.), *Système de philosophie, contenant la loquique et la métaphysique.* Imprimé par ordre du roi. Berlin, 1785.
- BAYNES (T. S.), *An Essay on the New Analytic of Logical Forms.* Edinburgh, 1850.
- BEATTIE (James), *Logic, &c.* 1804.
- BEAUSOBRE, *Réflexions philos. sur la certitude.* Mém. de l'Acad. de Berlin, 1776. Pp. 306–370.

- BÉCART, Exposé des Facultés, des Lois, et des Operations de l'Ame. *Bruxelles*, 1838.
- BECK (J. S.), Lehrbuch der Logik. *Rostock und Schwerin*, 1820.
- BECK (D.), Institutiones logicae. *Salzb.*, 1784.
Idem, Philosophia rationalis. 1764. 4to.
- BECK, Psychologie und Logik. *Stuttgard*, 1846.
- BECMANNUS (C. B.), Usu Logices. *Han.*, 1619.
- BEDÆ (Venerabilis), Opera Omnia. *Col.*, 1688.
- BEJER (C. F. A.), De formis cogitandi disjunctivis. *Lips.*, 1813.
- BELLOVISIUS (Amandus), Logica. *Venice*, 1535.
- BELSHAM (Dr Thomas), Compend. Logic. 1801.
- BENDAVID (Laz.), Versuch einer logischen Auseinandersetzung der Mathem. Unendlichen. *Berlin*, 1796.
- BENEDICTUS (Majoricensis), In Logicam.
- BENEKE (Fr. Ed.), Erkenntnisslehre nach dem Bewusstseyn der reinen Vernunft. *Jena*, 1820.
- BENTHAM (Dr Edward), An Introduction to Logic, Scholastic and Rational. *Oxford*, 1773. Reflexions on Logic. *Oxon*, 1770.
- BENTHAM (George), Outlines of a System of Logic. *London*, 1827.
- BERARD (Fréd.), Doctrine des rapports du physique et du moral de l'homme. *Paris*, 1823.
- BERG (Franz.), Epikritik der philosophie. *Auerstadt und Rudolstadt*, 1805.
- BERGK (J. A.), Die Kunst zu Denken. *Leipz.*, 1802.
- BERTIUS (P.), Logicae peripateticae lib. VI. *Lugd. Bat.*, 1604.
- BEURHUSIUS (Krid.), Dialecticae Rami.
Idem, Pædagogia logica. *Colon.*, 1583.
Idem, Defensio P. Rami dialecticæ. *Francof.*, 1589.
Idem, Ad P. Rami dialecticæ praxin introductio. *Francof.*, 1598.
Idem, Disputatio pro Ramea hoc est Socratica et Aristotelica philosophia. *Col.*, 1610.
- BINI (Vincenzo), Corso Elementario di Lezioni Logico-Metafisico-Morali. *Perugia*, 1818.
- BILSTENIUS (Joach.), Dialectica. *Hanov.*, 1592.
- BLAKEY (Robert), Essay on Logic. Second Edition. *London*, 1848.
- BLANCHET (Jean), Logique de l'espr et du cœur. *La Haye et Paris*, 1760.
- BLEMIDÆ (Nicephori), Epitome logica. Opera Wegelini. *Aug. Vind.* 1605.
- BLUNDEVILLE (Thomas), Arte of Logicke. 1599.
- BOEHME (C. F.), Beantwortung der Frage : Was ist Wahrheit? *Altenb.*, 1803.
- BOEHME (And.), Logica. *Franc.*, 1749.
- BOETHIUS, Opera cum notis varior. *Basil*, 1546.
- BOISGELIN (le Cardinal de), L'art de juger par l'analyse des idées. *Paris*, 1789.
- BONONIA (John), Compendium Dialectices. 1550.

- BONSTETTEN (Ch. Victor de), *Etudes de l'homme. Genève et Paris*, 1821.
- BOOLE (George), *The Mathematical Analysis of Logic. Cambridge*, 1847.
- BOOT (Gerardus de), *Philosophiæ Aristotilicæ accurata Examinatio ac solida Confusio. 1640.*
- BORELLY, *Elémens de l'art de penser, ou la logique réduite à ce qu'elle a de plus utile. Nouv. édit. Liège*, 1821.
- BORN (F. G.), *De scientia et conjectura. Leipz.*, 1805.
- BOSCHERUS (Hiezo), *Harmonia Logica. 1595.*
- BOTTURA (Pietro), *Logica. 1833.*
- BOSANQUET (S. R.), *New System of Logic. London*, 1839.
- BOUTERWECK (Fred.), *Lehrb. der philos. Vorkenntnisse. Goett.*, 1810 et 1820.
- Idem*, *Lehrbuch der philos. Wissenschaften. Goett.*, 1820.
- BRANISS (Jul.), *Die Logik. Berl.*, 1823.
- BREDERODIUS (Petrus Cornelius), *Analysis, seu Resolutiones Dialect. 1634.*
- BREREWOOD (Edw.), *Elementa Logicæ. Oxon.*, 1614.
- BRICOT, *Textus logices.*
- BRICOTUS (Thomas), *Abbre. Textus totius Logices. Paris*, 1494.
- BRIGHTLAND (John), *Art of Rhetoric and Logic. Lond.*, 1712.
- BRISOT (J. P.), *De la Vérité, &c. 1825.*
- BROOKE (Sir Robert), *The Nature of Truth. London*, 1640.
- BRUCE (John), *Syllabus of Logic. Edinburgh.*
- BRUCKERUS (Jac.), *Observatio de Pyrrhone.*
- BRUNO (Jord.), *De compendiosa architectura et complemento artis Lullii. Parisiis*, 1580.
- Idem*, *Ars memoriæ, sive de umbris idearum. Parisiis*, 1582.
- Idem*, *De lampade combinatoria Lulliana. Vitemb.*, 1587.
- Idem*, *De progressu et lampade venatoria logicorum. Vitemb.*, 1587.
- Idem*, *De imaginum, signorum, et idearum compositione ad omnia inventionum, dispositionum, et memoriæ genera, lib. iii. Francof.*, 1591.
- BRUXELLENSIS (Georgius), ou VAN BREUSSEL, *Facillima in Aristotelis logica interpretatio. Parisiis*, 1496. 4to.
- BUCHNER (A.), *Erkenntniss und Philosophie. Landsh.*, 1806.
- BUDDEUS (Jo. Fr.), *Elementa philos. Halæ*, 1703.
- BUFFIER (Claude), *Traité des premières vérités. Avignon*, 1822.
- Idem*, *Logiques Nouvelles. Paris*, 1714.
- Idem*, *Les principes du raisonnement exposés en deux logiques. Paris*, 1714.
- BUHLE (Jo. Theoph.), *Aristotelis. op., vol. i.-iv. Bipont.*, 1761-1793.
- Idem*, *Antiquorum Græcorum, &c.*
- Idem*, *Einleitung in die allg. Logik und die Kritik der reinen Vernunft. Goett.*, 1795.

- BULLFINGER (G. B.), *Præcepta logica. Jenæ*, 1729.
 BURFORD (John), *Insti. logica. Camb.*, 1680.
 BURGERSDICHIUS (Franc.), *Institt. logicæ ad Aristotelis, &c. Cantabr.* 1647.
Idem, *Logic. 1685.*
 BURIDANUS (J.), *Summula in logicam. S. L.* 1487. 4to.
Idem, *Compendium logicæ. Venet.*, 1499.
 BURKHAEUSER (Nic.), *Institt. logicæ. Wirceb.*, 1772.
 BURLEIUS (Walterus, Anglicus), *Scripta in Isagogen Porphyrii et artem veterem Aristotelis. Venet.*, 1509.
 BURSIVS (Adamus), *Dialectica Ciceronis. Samosci*, 1604.
 BUSCHERUS (Heiz.), *De ratione solvendi sophismata ex Rami logica deducta, lib. ii. Hamb.*, 1597.
Idem, *Harmoniæ logicæ Philippo-Rameæ, lib. ii. Lemgov.*, 1597.
 BUTNER (M. Guolf.), *Dialectica Germanica. Lips.*, 1576.
 BUZENKAY (Mich.), *Compendii logici. 1696.*

C

- CÆSARIUS (J.), *Dialectica. Paris*, 1541.
Idem, *Dialectica, acced. Jo. Murnellii Isagogen in decem Aristotelis prædicamenta. Moguntia*, 1550.
 CALKER (Fr. Von), *Denklehre, oder Logik und Dialektik, &c. Bonn*, 1822.
 CALLISEN (Ch. Fried.), *Kurzer Abriss der Logik und Metaphysik. Nureb. und Sulzbach*, 1805.
 CAMERARIUS (Gul.), *Selectæ disputationes philos. Paris*, 1630.
 CAMPANELLA (Th.), *Philosophia rationalis. Paris*, 1638.
 CANTIUNCULA (Claudius), *Topica. Basil*, 1520. Fol.
 CAPRA (Balth.), *Disp. Logica. Patav.*, 1606.
 CARAMUEL (J.), *Herculis labores logici. Francof.*, 1655.
Idem, *Philosophia rationalis et realis. Lovanii*, 1642.
 CARAMUEL (de Lob.), *Præcursor Logicus. Franc.*, 1654.
 CARBONEL (Hug.), *Ars Lulliana seu memoria artificialis. Paris*, 1621.
 CARDAILLAC (De), *Cours élémentaire de philosophie. Paris*, 1831. 2 vols.
 CARDANUS (Hier.), *Dialectica. Basil*, 1566.
 CARLOWSZKY (Sigism.) *Logica. Cassovia*, 1820.
 CARO (J.), *Cours élémentaire de philosophie. Paris*, 1831.
 CARPENTARIUS (Jac.), *Descriptio universæ artis disserendi ex Aristotelis organo logico. Parisiis*, 1552.
 CARTESIUS (Renatus), *Op. omnia. Amst.*, 1692.
 CARTIER (P. G.), *Logica. Wirceb.*, 1756.
 CARVILL, *Manual of Logic. 1821.*
 CASE (John), *In Aristotelis Dialecticam. London*, 1584.
 CASMANNUS (Oth.), *P. Rami dialecticæ et Melanethonis collatæ. Hanov.*, 1594.

- CASSANDER (G.), *Tabulæ præceptionum dialecticarum.* Paris, 1548.
- CASSIODORUS Opp. ed. Joh. Garatius. *Rotomagi*, 1679.
- CASTILLON (De), *Sur la manière d'enseigner de Socrate.* Mém. de l'Acad. de Berlin. 1779.
- Idem*, *Réflexions sur la logique.* Mém. de l'Acad. de Berlin. 1802.
- Idem*, *Mémoire sur un nouvel algorithme logique.* 1803.
- CHAMBERS (R. and W.), *Logic for the People.* *Edinburgh*, 1849.
- CHAMBRE (F. I.), *La Logique.* Paris, 1754.
- CHAMPAIGNAC (Jean de), *Logique.* Paris, 1606.
- CHANGEUX, *Traité des extrêmes ou des élémens de la science de la réalité.* *Amst.*, 1767.
- CHARMA, *Leçons de Logique.* Paris, 1842.
- CHARSTADIUS (Val.), *Syn. Logica.* *Norib.*, 1622.
- CHAUVIN (Steph.), *Lexicon philos.* *Rotterod.*, 1692.
- CHESNEIOPHORUS (Joh.), *Logica.* *Stockholm*, 1629.
- CHLADENIUS (Job. Nart.), *Dissert. de vita et hæresi Roscellini.* *Erlang.*, 1756.
- CHLICHTOVÆUS (Jud.), *Fundamentum logicæ.* Paris, 1534.
- Idem*, *Introductio in terminorum cognitionem, in libros logicorum.* Paris, 1520.
- CHOUL (John Rob.), *Introd. to Logic.* 1672.
- CHRÉTIEN (Charl. F.), *An Essay on Logical Method.* *Oxford*, 1848.
- CHRISTIERN (P. N.), *Diss. de usu logicæ in ideis acquirendis.* *Upsal.*, 1788.
- CHRYSOVELONE, *Traité de Logique et de morale.* *Vienne*, 1800.
- CLAUBERGIIUS (Joh.), *Logica.* *Amst.*, 1658.
- Idem*, *Ontosophia nova et accedit logica contracta.* *Duisburgi ad Rh.*, 1660.
- Idem*, *Onderscheijt tusschen de Cartesiaensche ende de anders in de schoolen gebruijckelijke philosophie.* *Nijmegen*, 1661.
- Idem*, *Initiatio philosophi, sive dubitatio Cartesianæ.* *Duisb.*, 1655.
- Idem*, *Differentia inter Cartesianam et alias in scholis usitatas philosophias.* 1680.
- Idem*, *Defensio Cartesianæ adversus Revium.* *Amst.*, 1652.
- Idem*, *Specimen logicæ Cartesianæ.*
- CLERICUS (Joan.), *Opp. philos.* *Lips.*, 1710.—Sebast. Edzard a publié: *Examen logicæ Joannis Clerici.* *Hamb.*, 1699.
- Idem*, *Logica.* *Amst.*, 1693.
- CLERC (John le), *Logica.* *Lond.*, 1692.—*Logica.* *Amst.*, 1692.
- CLIGHTOVEUS (J. N.), *Logicæ Introd.* 1520.—*Fundamentum Logicæ.* Paris, 1554.
- CŒURET DE ST GEORGES, *Principes de logique.* Paris, 1822.
- COKE (Zac.), *Art of Logic.* 1687.
- COLLARD (John), *Logic.* 1796.
- Idem*, *A praxis of Logic.* 1799.
- COMPLUTENSIS COLLEGH FF. discalceati in Aristotelis, &c. *Lugd.*, 1668. 2 vols.

- CONDILLAC, *Œuvres complètes*. Paris, 1822. 16 vols.
 CONIMBRICENSIS COLLEGIJ Comment. in Isagogen Porphyrii et omnes libros Aristotelis de dialectica. *Lovan.*, 1569.
 CONTZEN (Adam), *Prælectiones logicæ*. *Mechliniæ*, 1822.
 CORONEL (Vincentius), *Quæst. Logicales*. Paris, 1520.
 CORONEL (Ant.), *Logica*. Paris, 1530.
 CORVINUS (Chr. Ant. Jo.), *Institutiones philos.* *Jenæ*, 1739.
 COSMUS ALEM. (Algazelis Arabis), *Logica et philos.* *Colon.*, 1501.
 COSTACCIARO, *Introd. in Logicam*. 1597.
 CRAKANTHORP (Richard), *Logica*. *London*, 1622.
 CRASSOTIUS (Jo.), *Logica*. Paris, 1617.
 CRELLIUS (Fort.), *Isagoge logica*. *Neustad.*, 1592.
Idem, *Isagoge logica*. *Stett.*, 1621.
 CROUSAZ (J. P. de), *Système des réflexions, ou nouvel essai de logique*. *Amst.*, 1725.
Idem, *Logicæ compendium*. *Groningæ*, 1725.
Idem, *Logicæ systema*. *Genevæ*, 1724.
Idem, *Examen du Pyrrhonisme ancien et moderne*. *La Haye*, 1733.
Fol.
Idem, *Observations critiques sur l'abrégé de la logique de M. Wolf*. *Genève*, 1744.
 CRUCHI (Jacobi), *Medulla Logicæ*. *Lugd.* 1640.
 CRUSIUS (Chr. A.), *Weg zur Gewissheit und Zuverlaessigkeit der menschlichen Erkenntnisse*. *Leipz.*, 1747.
Idem, *Entwurf der nothwendigen Vernunftwahrheiten*. *Leipz.*, 1745.
Idem, *Dissert. de usu et limitibus rationis sufficientis*. *Lips.*, 1752.
Idem, *De summis rationis principiis*. *Lips.*, 1775.
 CUOCO, *Esercizio Logico*. 1824.
 CYPRIANUS (Benedictus), *Clavis Logicæ*.

D

- DAGOUMER (Guill.), *Philosophia ad usum scholæ adornata*. *Vind. Lugd.*, 1746.
 D'ALEMBERT, *Histoire de Philosophie*. Paris, 1760.
 DALHAM (Fl.), *De ratione recte cogitandi*. *Aug. Vind.*, 1762.
 DAMASCENUS (Joh.), *Capita philos. sive dialectica*. Paris, 1712. Vol. I.
 DAMIRON (Ph.), *Cours de philosophie*. Paris, 1831.
 DANHAUERUS (Jo. Conr.), *De syllogismo infinito*. *Argent.*, 1631.
 DANIEL (Gabriel), *Voyage du monde de Descartes*. Paris, 1691.
 DANIEL (G.), *Some Words on the Logick of my Lord Bacon*. *London*, 1645.
 DAUBE (L. J. J.), *Essai d'idéologie, ou introduction à la grammaire générale*. Paris, 1805.
 DAVIES (Charles), *The Logic and Utility of Mathematics*. *New York*, 1850.

- DAVE (Ant.), *Dialectica peripatetica*. *Lov.*, 1652.
- DEDDELEY (P. Jac.), *Summulæ logicæ*. *Ingolstd. et Aug. Vind.*, 1751.
- DEGERANDO, Des signes et de l'art de penser, considérés dans leurs rapports mutuels. *Paris*, 1800. 4 vols.
- DELARIVIÈRE, *Logique classique*. *Clermont*, 1829.
- DE MORGAN, on the Structure of the Syllogism. 1847.
- DENZINGER (Ign.), *Prima lineamenta logices*. *Leod.*, 1818.
Idem, *Institutiones logicæ*. *Leod.*, 1824. 2 vols. 8vo.
Idem, *Prima elementa logices, secundum institutiones logicas exposita*. *Leod.*, 1826.
- DERODON (David), *Logica*. *Geneva*, 1659.
Idem, *Compend. logicæ*. 1663.
Idem, *Phil. Cent. Logica*. *Geneva*, 1664.
Idem, *Logica Metaphysica*. *Geneva*, 1669.
- DESCHAMPS, *Logique*. *Berlin*, 1736.
- DESTUTT (Comte de Tracy), *Elémens d'idéologie, logique*. *Paris*, 1818.
Idem, *Principes logiques*. *Paris*, 1817.
- DENXIPPUS, *Quæstionum in Aristotelis categorias*. *Paris*, 1549.
- DICKER (Conrad), *Logica*. *Oppen.*, 1620.
- DIDACUS (a Jesu), *In Logicam*.
- DIDACUS DE LEDESMA, *Dialectica*.
- DIDACUS DE ZUNIGA, *Dialectica*.
- DIDACUS MASIVS, *Dialectica*.
- DIDACUS NAVERUS, *Dialectica*.
- DIDACUS ORTIZ, *Dialectica*.
- DIDEROT (Den.), *Œuvres philos.* *Paris*, 1819. 7 vols.
- DIGBY (Edward), *De Duplici methodo libri duo, unicam P. Rami Methodum Refutantes*. 1589.
- DIEKSEHN (E. H.), *Organon des gesammten transcendenten Analysis*. *Berlin*, 1845.
- DOLZ (Joh. A.), *Opus Syll. sive Logices*. *Paris*, 1512.
- DOLZ (J. Chr.), *Kleine Denklehre*. *Leipz.*, 1807.
- DOMINICUS BANEZ, *Dialectica*.
- DOMINICUS SOTO, *Dialectica*.
- DORPIUS (Martinus), *Orationes de Laudibus Aristotelis*. 1514.
- DRALLAC, *Epitome of Logic*. 1795.
- DREW (James), *Logick*. *London*, 1702.
- DROBITSCH (W.), *Neue Darstellung der Logik*. *Leipsic*, 1836.
- DULLARDUS (J.), *Quæstiones in Aristotelis*. *Paris*, 1509. Fol.
Idem, *Quæstiones in librum prædicabilem Porphyrii, cura Joannis Drabbii Bonicollii*. *Paris*, 1520.
Idem, *Præfatio ad Logicam Joannis Buridani*.
- DU MARSAIS, *Logique*. 1769.
- DUNCAN (Mark), *A Latin System of Logic*. *Salmur.*, 1612.
- DUNCAN (Dr William), *Logic*. *London*, 1759.
- DUTENS, *Logique*. *Paris*, 1773.
- DU TRIEU (Phil.), *Manductio ad Logicam*. *Oxon.*, 1826.

E

- EBELING (H. M. F.), Versuch einer Logik für den gemeinen Verstand. *Berlin*, 1797.
- EBELIUS (J. P.), Hermes logicus. 1620.
- EBERHARD (J. A.), Allgemeine Theorie der Denkens und Empfindens. *Berlin*, 1786; *Leipz.*, 1786.
- EBERT (P. C.), Elementa logicæ eclecticæ. *Francof.*, 1763. 4to.
- EISENACH (J. J.), Summa totius Logicæ. *Erfurt*, 1501.
- Idem*, Epitome seu Breviarium Dialecticæ.
- EIXALA (D. Ramon Marti de), Corso di Filosofia de las Ideas, la Grammatica general, y la Logica. *Benel.*, 1847.
- ELIOT (John), The Logick Primer, for the use of the Indians. 1672.
- ENANDER (S. N.), Logica. 1641.
- ENDFIELD (William), Elements of Logic. *Lond.*, 1810.
- ENGEL (J. J.), Versuch einer Methode die Vernunftlehre aus den Platonischen Dialogen zu entwickeln. *Berlin*, 1780.
- ENGEL, Sur la réalité des idées générales ou abstraites. *Mémoires de l'Acad. de Berlin*. 1801.
- ENGELHARD (Nicol.), Institutionum philosophiæ theoreticæ, complectans logicam. *Groningæ*, 1743.
- ERNESTUS (Jo. Aug.), Initia doctrinæ solidioris. *Lips.* 1796.
- ERNSTHAUSEN (V. T. E. von), Inhalt der logischen Wahrheit. *Berlin*, 1804.
- ESCHENBACH (J. C.), Logik, oder Denkwissenschaft. *Rostock*, 1756.
- ESSER (Wilh.), System der Logik. *Eberfeld*, 1823.
- EUFÆLER, Specimen artis ratiocinandi naturalis et artificialis. *Hamb.* 1684.
- EULER, Léttres à une princesse d'Allemagne. *Nouv. éd. Paris*, 1812. —Logique, t. i.
- EUSTACHIUS (Fran.), De Rebus Dialecticis. *Cant.*, 1648.
- EVERARDUS (Nicolaus), Topica de Locis Logicalibus. *Malines*, 1493.
- EWYCK (J. van), Dissertatio inaug. de cognitionis in mathesi et in philosophia indole. *Traj. ad Rh.*, 1810.

F

- FABER (John R.), Totius Logicæ, &c. *Aurel.*, 1623.
- FABRIANO, Prospetto degli Studj Filosofici. 1833.
- FABRICIUS (Joh. Alb.), Diss. de cavillationibus Stoicorum. *Lips.*, 1692.
- FACCIOLATI (Jac.), Logicæ disciplinæ, &c. *Venet.*, 1728.
- Idem*, Institutiones scholæ peripateticæ. *Venet.*, 1729.
- FARDELLA (Michel Ang.), Logica. *Venet.*, 1696.
- FECHNER (G. Th.), Katechismus der Logik oder Denklehre. *Lips.*, 1823.
- FEDER (J. G. H.), Logik und Metaph. *Goett.*, 1790.
- Idem*, Grundsætze der Logik und Metaphysik. *Goett.*, 1794.

- FEDER (J. G. H.), Vorlesungen ueber die Federsche Logik und Metaph.
Lemgo, 1793-1794.
Idem, Erklaerung der Logik, Metaph. und pract. Philosoph. nach Feder.
Wien, 1793-1794.
Idem, Institutiones logicae et metaph. *Goett.*, 1797.
- FELIX, Leçons de logique. *Yverdon*, 1770.
- FELL (Dr John), Artis Logicæ, &c.
- FELWINGER (Jo. Paul.), Philosophia Altdorfiana, hoc est disputationes collectæ Scherbi, Soneri, Piccarti. *Norimb.*, 1644.
- FERDINANDUS ENCIAS, Princip. Dialecticæ.
- FERBER (J. C. F.), Vernunftlehre. 1770.
Idem, Grundriss der Vernunftlehre. *Helmst.*, 1774.
- FEUERLINUS (J. G.), Diss. de variis modis logicam tradendi. *Jenæ*, 1712.
Idem, De logicae hieroglyphica. *Lips.*, 1712.
Idem, Orat. inaug. de prudentia logica ex vitis eruditorum addiscenda. *Alt.*, 1715.
- FICHTE (J. G.), Ueber den Begriff der Wissenschaftslehre oder sogenannten Philosophie. *Weimar*, 1794-1798.
Idem, Grundlage der gesammten Wissenschaftslehre. *Lips.*, 1794-1802.
- FILLASIER, Eraste, ou l'ami de la jeunesse. Cinquième éd. *Paris*, 1803.
—Les entretiens 2 et 3 contiennent des élémens de logique.
- FISCHHABER (G. E. F.), Lehrbuch der Logik. *Stuttg.*, 1818.
- FLATT (K. Ch.), Bemerkungen gegen den Kantischen und Kiese Wetterischen Grundriss der reinen allgemeinen Logik. *Tuebingen*, 1802.
- FLOTTE (J. S.), Leçons élémentaires de philos., t. 1er, *Logique*. 2me éd. *Paris*, 1805.
- FONSECA (Petr.), Institut. dialecticæ, lib. viii. *Basil*, 1590; *Colon.*, 1591; *Leod.*, 1608.
- FORMEY, Examen de la question: Si toutes les vérités sont bonnes à dire. *Mém. de l'Acad. de Berlin*, 1777, pp. 333-354.
- FORSTER (Chr.), A. G. Baumgarten philos. gen. cum dissert. præmiali de dubitatione et certitudine. *Halæ*, 1770.
- FOUCHER, Philosophia academica. *Paris*, 1692.
- FRANCKE (G. S.), Institutiones psychologiæ empiricæ et logicæ. *Kilia*, 1814.
- FRANCKE (F. J. C.), De sensu proprio quo Aristotelis usus est in argumentandi modis. *Diss. acad. Rostochii*, 1824. 4to.
- FRANCISCUS ALPHONSUS, Disputa in Logicam.
- FRANCISCUS BIVARIUS, Dialectica.
- FRANCISCUS DEL FRESNO, In Univers. et Prædicamenta.
- FRANCISCUS FURTADO, Dialectica.
- FRANCISCUS LOSCOS, De Logica Arte.
- FRANCISCUS MURCIA, Selecta ad Dialect.
- FRANCISCUS NUNEZ, Dialecticæ.

- FRANCISCUS DE OVIEDO (Madritanus), Soc. Jesu, cursus philos. ad unum corpus redactus, t. I., complectens summulas, logicam, physicam, &c. *Lugd.*, 1651.
- FRANCISCUS SANCHEZ, Organum Dialecticæ.
- FRANCISCUS SAUREZ, In Logicam.
- FRANCISCUS SAUREZ DE VILLEGAS, Dialectica.
- FRANCISCUS DE TOLEDO, Logica.
- FRAUNCE (Abraham), Lawier's Logike. *London*, 1588.
- FREIGIUS (Jo. Th.), Artium logicarum schematismi logici. *Bas.*, 1560.
- FRIES (Jac. Fred.), Grundriss der Logik. *Heidelb.*, 1811-1819.
- FRISCHLINUS (Nic.), Dialogus contra P. Rami sophisticam pro Aristotele. *Francof.*, 1590.
- FRISIUS (Paulus), Comparationum logicarum lib. III. *Francof.*, 1596.
- FROMMENIUS (Andrew), Synopsis Metaphysica. *Oxford*, 1649.
- FROMOND (Claude), Della Logica. 1762.
- FULLER, Art of Thinking. *London*, 1731.
- FUMANA (Adam), System of Logic. *Padua*, 1739.

G

- GALLANDIUS (Petrus), Oration. desert. pro Aristotele et Parisiensi Schola, contra novam Petri Rami Academiam. 1551.
- GALLUPI (Baron Pasquale), Lezioni di Logica, e di Metafisica. *Firenze*, 1841.
- GAMMARUS (P. A.), Rhetorica ac dialectica legalis.
- GARNIER (Adr.), Précis d'un cours de psychologie. *Paris*, 1831. 8vo.
- GARRIGUES, Cours de philosophie. *Paris*, 1821.
- GARVE, De nonnullis quæ pertinent ad logicam probabilium. 1766.
- GASCON (Johannes), In Logicam.
- GASPAR CARDILLO, Intro. in Dialecticam. Summa Summularum. In Univ. Prædi. et alia Dialectica.
- GASPAR DE LA FUENTE, Dialectica.
- GASPAR LAX, Dialectica.
- GASPAR VAZ, Dialectica.
- GASSENDI (P.), Opera omnia. *Lugd.*, 1658.
- Idem*, Syntagma philosophiæ Epicuri. *Hagæ Comit.*, 1659.
- Idem*, Exercitationes paradoxicæ adversus Aristotelem. *Amstel.*, *Elzev.*, 1649.
- GAULTIER (l'Abbé), Méthode pour analyser la pensée et pour faire des abrégés. *Paris*. 18mo.
- GEWILLER (Jo.), Par. Artis Logices Compil. *Basil*, 1511.
- GENOVESI (Antony), Artis Logicæ. *Naples*, 1744.
- Idem*, Elementa Artis Logicæ.-Critic. 1767.
- Idem*, Della Logica. 1799.
- GEORGIUS ANEPORYMUS, Compendium philos. sive organi Aristotelis: Græce et Latin. *Aug. Vindel.*, 1600.

- GEORGIUS (Bruxellensis), *Logica secundum, &c.* 1512.
 GEORGIUS DIACONUS, *Epitome logicæ Aristotelis.* *Par.*, 1548.
 GENTY (F. J. H.), *Elémens de philosophie, livre premier, Logique.*
Paris. 1819.
 GERHARD (Ephr.), *Delineatio philos. rationalis eclecticæ.* *Jenæ*, 1703
 et 1716.
 GERLACH (Glo. Wilh.), *Grundriss der Logik.* *Halle*, 1817, 1822.
Idem, *Grundriss der Fundamental-Philosophie.* *Halle*, 1816.
 GEORGIUS, *Expositiones logicales.* *S. L.*, 1504. 4to.
 GESNER (J. M.), *Primæ Lineæ Isagoges in eruditionem universalem.*
Lips., 1785.
 GEULINGIUS ou GEULINCX (Arnold), *Logica fundamentis, &c.* *Lugd.*
Bat., 1662.
Idem, *Annotata majora in principia philosophiæ R. Descartes.* *Dor-*
draci, 1691.
Idem, *De Geest-kunde.* *Dordr.*, 1696.
 GEZELIUS (B.), *Artis Logicæ Compil.* 1661.
 GRIFFENE (Laurent.), *Prodidagmata sive logicæ, &c.* *Lov.*, 1627. 4to.
 GILLET (R.), *Logic.* *London*, 1796.
 GIBON, *Cours de Philosophie.* 1842.
 GOCLENIUS (Rud.), *P. Rami dialectica collecta a M. Chst. Cramero.*
Ursell., 1600.
Idem, *Isagoge in organon Aristotelis.* *Francof.*, 1598.
Idem, *Problemata logica et philosophica.* *Marb.*, 1614.
 GOESS (G. F. D. von), *Grundriss der Logik.* *Amst.*, 1795.
 GONZALEZ (Fr.), *Logica Tripartita.* *Romæ*, 1639. 4to.
 GORLEUS (David), *Exercitationes philosophicæ.* 1620. Foppens,
Bibl. Belg.
 GORSICIUS (J.), *Commentariorum artis dialecticæ.* *Lips.*
 GOTHUS (L. P.), *Institut. Logicæ.* 1578.
 GOTTIGNIES (Æg. F.), *Logistica Univer.* *Neap.*, 1687.
 GOTTSCHED (J. Chr.), *Erste gründe der gesammten Weltweisheit.* *Leipz.*,
 1734.
 GOVEANUS (Ant.), *Responsio ad Rami calumnias pro Aristotele.* *Paris*,
 1543.
 GOVEANUS (Th.), *Logica elenctica.* *Dublín*, 1683.
 GRAY (G. T.), *Lessons on Logic.* *London*, 1850.
 GRANGER (Thomas), *Divine logic.* *London*, 1620.
 GRAVESANDE (W. J.), *Logic.*
 GREENE (Robert), *The Principles of Philosophy.* *Cambridge*, 1717.
 GREGORIUS DE ARCS, *Dialectica.*
 GROEFFE (Joh. Fr. Chr.), *Die Socratik nach ihrer urspruenglichen Bes-*
chaffenheit. *Goettingen*, 1794.
 GRÆTER (F. D.), *Ausfuehrliche Logik.* *Esslingen*, 1815.
 GROSSERUS (Sam.), *Pharus intellectus sive logica electiva.* *Lipsiæ*,
 1697.
 GRUITHUISEN (F. P.), *Grundriss der reinen Logik.* *Glogau*, 1808.

- GRUYER (L. A.), *Système des facultés de l'âme*, par Laromiguière. *Bruxelles*, 1823.
- GUNELLUS (Petr.), *Commentarius de doctrina et arte demonstrandi*. 1554. *Bibl. Belg.* II.
- GUISCHET (P.), *Artis Rationandi*. *Salmur.*, 1650.
- GUNDLING (N. H.), *Via ad veritatem moralem*. *Hallæ*, 1713 et 1726.
- GUNTHERUS (J. Casp.), *Dissertatio de methodo disputandi Megarica*. *Jenæ*, 1707.
- GUTKUS (Georg.), *Logica divina sive peripatetica*. *Colon.*, 1631.

H

- HAGER (Joh. Geor.), *Dissertatio de methodo disputandi Euclidis*. *Lips.*, 1736.
- HALLIER (Francis), *Analysis Logicæ*. *Paris*, 1630.
- HANGESTUS (Hier.), *Problemata Logicalia*. *Paris*, 1516.
- HANSCHUS (Mich. Gottl.), *Principia philosophiæ*. *Francof. et Lips.*, 1728.
- Idem*, *Ars inveniendi, sive synopsis regularum præcipuarum artis inveniendi*. *Franc. et Lips.*, 1728.
- HANSLIK (J.), *Uebersicht der logischen Formen*, 3 Tabell. gr. fol. *Prag.*, 1823.
- HARDERWICENSIS (Gerardus), *Commentaria in Logicam Aristotelis*. 1494.
- HARLAY (Fr. de), *Artificii logici descriptio*. *Paris*, 1605.
- HATRANUS (Steph.), *Introductio ad principia philosophiæ solidioris*. *Debriezini*, 1757.
- HATHECORNE, *Abrégé latin de philosophie, avec une introd. et des notes françaises*. *Paris*, 1784. 2 vols., 12mo.
- Idem*, *Logique française, pour préparer les jeunes gens à la rhétorique*. *Paris*, 1810.
- HAUMONT, *Discours sur les arts et les sciences en général, et sur leur langue en particulier*. *Brux.*, 1818.
- HAUGHTON (Sir Graves Channing), *Prodromus, or an Inquiry into the First Principles of Reasoning, including an Analysis of the Human Mind*. *London*, 1839.
- HAUNOLDUS (C.), *Logica practica in regulas digesta*. *Ingolst.*, 1646.
- HEDGE (Levi), *Elements of Logic*. *New York*, 1816.
- HEEREBOORD (Adr.), *Ermenia logica*. *Lugd. Bat.*, 1654 et 1656.
- Idem*, *Philosophia naturalis, moralis, rationalis*. *Lugd. Bat.*, 1654.
- HEEREBOORD (And.), *Synop. Logicæ*. *Lond.*, 1658.
- HEGEL (G. W. F.), *Wissenschaft der Logik*. *Nuremberg*, 1816.
- Idem*, *Encyclopædie der philos. Wissenschaften im Grundriss*. *Heidelb.*, 1817.
- HEGENDORPHINUS (U.), *Dialectica legalis cum scholiis*. *Paris*, 1547.
- HEIBERG, *Einleitenden Vortrag zum Logischen Cursus*. 1840.

- HEIGL (G. A.), Die platonische Dialektik. *Landsh.*, 1812.
- HEINECCIUS (J. G.), Elementa philos. *Amst.*, 1730.
- HEMERT (P. van), Beginzels der Kantiaensche wysgeerte, naar het hoog duitsch vreylyk gevolgd, &c. *Amst.*, 1796.
- HEMSTERHUY, Aristée, ou de la vérité. *Paris*, 1779.
- HENNERT (Joh. Fred.), Aphorismi philosophici. *Traj. ad R.*, 1718.
- HERBERT (J. F.), Lehrbuch zur Einleitung in die Philosophie. *Königsb.*, 1813–1821.
- HERBERT (B.), Elementa logicæ. *Wurtzb.*, 1773.
- HENSER (R. J.), Logica prælectionibus accommodata. *Colon.*, 1815.
- HESELBEINIUS (Joh.), Theoria Logica. *Franc.*, 1606.
- HIERIUS (Joan.), Precepta Doctrinæ Logicæ. *Cant.*, 1647.
- HIERONYMUS MONTER, Dialectica.
- HIERONYMUS PARDO, Dialectica.
- HIERONYMUS PLA, Dialectica.
- HIERONYMUS DE VALERA, Dialectica.
- HILAIRE, St (J. B.), Logique d'Aristote. *Paris*, 1844.
- HILLEBRAND (Jos.), Grundriss der Logik. *Heidelb.*, 1820.
- HILLER, (J. F.), Curriculum philosophiæ, logicam compl. *Wittenb.*
- HILLS (T. S.), System of Logic. 1846.
- HIND (Samuel), Introduction to Logic. *Oxford*, 1827.
- HIPPUS (Fabianus), Prob. Physica et Logica. *Franc.*, 1603.
- HIPPUS (M. Fabianus), Problemata physica et logica peripatetica. *Witteb.*, 1698.
- HISPANUS (P.), Summulæ logicales. *Colon. Agr.*, 1622. 4to.
- HOBBS (Th.), Opera omnia. *Amst.*, 1668. 2 vols., 4to.
- HOECKELSHOVEN (Jo.), Systema logicum in versibus. *Francof.*, 1611.
- HOEN (Math.), Comp. Logices. *Cologne*, 1619.
- HOFFBAUER (J. C.), Anfangsgründe der Logik. *Halle*, 1794–1810.
- Idem*, Analytik der Urtheile und Schluesse. *Halle*, 1792.
- HOFFMAN (Don.), De usu et appli. noti. Logicarum. *Frankfort*, 1596.
- HOGEL (Ch.), Empirische Psychologie und Logik. *Gera.*, 1810.
- HOJER (B. H.), Aphorismi Logic. Transcendent. *Upsala*, 1812.
- HOLLMANN (S. C.), Institutiones philos. *Vitemb.*, 1729.
- HOLYOAKE (G. L.), The Logic of Facts. *London*, 1848.
- HOOKE (Dr), The True Method of Building a Solid Philosophy; or, A Philosophical Algebra. *London*, 1645.
- HORNEIUS (Con.), Logicæ. *Helmt.*, 1621.
- HORTIUS (Gregory), Instit. Logicarum. 1618.
- HORVATH (J. B.), Institutiones logicæ. *Aug. Vind.*, 1772 et 1781.
- HOTOMANNUS (F.), Dialecticæ institutiones. *Hærvi*, 1573.
- HUENS, (Augustus, a native of Mechlin, and born 1521), Dialectica.
- Idem*, Prodidagmata Logices. 1578.
- HUETIUS (P. D.), Censura philosophiæ Cartesianæ. *Paris*, 1689.
- Idem*, De imbecillitate mentis humanæ, lib. III. *Amst.*, 1738.
- HULSCHOFF (Allard.), Logica. 1772.
- HUNGAR (C. F.), Ueber die Natur der Wahrheit. *Dresden*, 1786.

- HUNNÆUS (Aug.), *Dialectica. Antverpiæ*, 1566.
Idem, *Prodidagmata logicæ. Antverp.*, 1566.
✓ HUTCHESON (Fr.), *Compendium logicæ et metaph. Argent.*, 1771.
HUYCHE (John), *A Treatise on Logic. Oxford*, 1833.
HYACINTHUS DE SARASA, *In Logicam.*

I

- IGNATIUS FRANCISCUS, *In Arist. Logicam.*
ISEENDOORN (Gisbertus), *Cursus Logicus. Oxford*, 1658.

J

- JACOB (L. H.), *Grundriss der allgemeinen Logik. Halle*, 1789.
JACCHÆUS (Gill.), *Primæ Philosophiæ Institutiones. Lugd. Bat.*, 1616.
JACQUIER, *Elémens de Psychologie, d'idéologie, et de logique.*
JAMESON, *Grammar of Logic. 1824.*
JANKOWSKY (J. E.), *Logique en Polonoise. Cracovie*, 1822.
JANI DI SORIA, *Philosophiæ Rationalis Institutiones. 1741.*
JANSSENS (J. H.), *Logique. Louvain*, 1825.
JARDINE, *Synopsis of Logic. 1820.*
JAVELIN (H. L.), *In Arist. Logicam. 1663.*
JOACHIMUS CLIMENTI, *Disputa Dialecticæ.*
JOANNES BAPTISTA MOULLOR, *Priorum Analyticorum. De Nomine Entelech.*
JOANNES CANTERO, *In Porph. Isagogen.*
JOANNES CARAMUEL, *Præcursor Logicus.*
JOANNES CLEMENS, *In Prædicamenta.*
JOANNES (Constan.), *Artis Logicæ. Massil.*, 1674.
JOANNES DALZ, *Syllogismi.*
JOANNES (Grammaticus), *Comment. in prior. analyt. Aristotelis. Venet.*, 1536.
JOSEPHUS FERRER, *Logica.*
JULIUS PACIUS, *Commentarius Analyticus in Porphyrii Isagogen et Aristotelis Organon. Francof.*, 1592.
JUNGIUS (Joach.), *Logica Hamburgensis. Hamburg*, 1638.

K

- KALKREUTH (H. W. A. von), *Was ist Wahrheit? Leipz.*, 1821.
KAMES (Lord), *Sketches of the History of Man. 1770.*
KANT (Emm.), *Kritik der reinen Vernunft. Leipz.*, 1781.
Idem, *Die falsche Spitzfindigkeit der vier syllogistischen Figuren. Königsb.*, 1763.
Idem, *Vermischte Schriften. Halle*, 1799.
Idem, *Logik, herausg. Königsb.*, 1800.

- KECKERMAN (Barth.), *Systema Logica*. *Han.*, 1600.
Idem, *Præcog. Logica*. *Han.*, 1604.
Idem, *Gymnasium Logicum*. *Han.*, 1605.
Idem, *Systema Logicum*. *Han.*, 1613.
KEMPE (Alex.), *Systema Logica*. 1623.
KESLERUS (Andreas), *Tract. Logicus*. *Wittenb.*, 1623.
Idem, *Princip. Logicorum*. *Wittenb.*, 1642.
KETT (Henry), *Logic*. *Lond.*, 1809.
KIESEWETTER (J. G. C.), *Grundriss einer allgemeinen Logik*. *Berlin*, 1795.
Idem, *Logik zum Gebrauch fuer Schulen*. *Berlin*, 1797.
Idem, *Compendium einer allg. Logik nach Kant'schen Grundsætzen*. *Berlin*, 1796.
KINKER (J.), *Essai d'une exposition succinete de la critique de la raison pure*. *Amst.*, 1801.
KIRBY (John), *Logic*. *Lond.*, 1752.
KIRCHMAN (John), *Rudim. Logicæ*. *Lub.*, 1669.
KIRWAN (Rich.), *Logic*. *Lond.*, 1807.
KLEIN (G. M.), *Verstandeslehre*. *Bamb.*, 1817.
Idem, *Anschauungs und Denklehre, ein Handbuch zu Vorlesungen*. *Bamb. und Würzb.*, 1818.
KNIGGE (Phil. Freih. von), *Versuch einer Logik*. *Hanov.*, 1789.
KNUTZEN (Mart.), *Elementa Philos. Rationalis sive Logica*. *Regiomonti*, 1771.
KOCH (C. D.), *Specimen Polyhistoris Logici*. *Jenæ*, 1728.
Idem, *Programma de Logices Abusu*. *Ib.*
KOEPPEN (Fred.), *Leitfaden fuer Logik und Metaphysic*. *Landshut.*, 1809.
KOHLER (Lud. Mar.), *Elementa Logicæ*. *Gotting.*, 1740.
KRAGIUS (Andr.), *Schola Ramea, vel defensio P. Rami adversus G. Leibleri calumnias*. *Basil*, 1582.
KRENTZ (Albert), *Instit. Logicæ*. *Leipsic*, 1517.
KRAUSE (C. Christi Fred.), *Grundriss der Historischen Logik*. *Jena*, 1803.
KRUG (Wilh. Traug.), *Denklehre oder Logik*. *Kænigsb.*, 1806.
Idem, *Handbuch der Philos. und der Philosophischen Litteratur*. *Leipz.*, 1820.
Idem, *Fundamental Philosophie*. *Zullichau und Freystadt*, 1803.
Idem, *Von der Ueberzeugung nach ihren verschiedenen Graden*. *Jena*, 1797.
Idem, *System der theoret. Philos. :—Logik*. *Kænigsb.*, 1819.

L

- LAMBERT (Joh. Heinr.), *Neues Organon*. *Leipz.*, 1764. 2 vols.
Idem, *Neues Organon*. 1844.
Idem, *Logische und Philosophische Abhandlungen*. *Dessau*, 1786, 1787. 2 vols.

- LAMBERT (Joh. Heinr.), Anlage zur Architectonik, oder Theorie des Erstem und Einfachen in der Philos. und Mathemat. *Riga*, 1771. 2 vols.
- Idem*, Examen d'une espèce de superstition ramenée au calcul des probabilités. Mém. de l'Acad. de Berlin. 1771.
- LANCELIN, Introduction à l'analyse des systèmes.
- LANGE (Joh. Joach.), Medicina mentis. *Hale*, 1703.
- LANIOLE (De), La Logique sans épines, et ses matières rendues les plus claires du monde, par des exemples sensibles. 2me édit. *Paris*, 1670.
- LAPIDANUS (Guill.), Methodus dialecticæ Aristotelicæ. *Lud.*, 1542.
- LAROMIGUIÈRE (P.), Leçons de Philosophie. *Paris*, 1815.
- LARROQUE (P.), Elémens de Philosophie. *Paris*, 1831.
- LATHAM, First Lines of Logic.
- LAURÆUS (Ol.), Elementa Logicæ. 1655.
- LAYRITZ (P.), Elementa Logicæ. *Stuttg.*, 1765.
- LAX (Gasp.), In Logicam Tractatus varii. *Paris*, 1511. Fol.
- LE BRETON (1e P.), La Logique adaptée à la Rhétorique. *Paris*, 1788.
- LEDENO (Joannes Sanchez), Logica.
- LEECHMAN (John), Logic. *Glasgow*, 1847.
- LEEWIS (Dion. a), De Scientia Universalium.
- LE GRAND (Ant.), Philosophia veterum e mente Renati Descartes. *Lond.*, 1671.
- Idem*, Institutio Philosophica. *Lond.*, 1672; *Norimb.*, 1679.
- LEHMANN (J. Jac.), Neue und Nuetzlichste Art der Vernunftlehre, 1723.
- LEHMUS (C. D.), Grundriss des gesunden Menschenverstandes. *Heilbr.*, 1785. 4 vols.
- LE MOINE (P. J.), Comment. acad. de diversi adsensus formis quæ dicuntur scientia, fides, opinio, nec non de fiducia in rationis humanæ auctoritate collocanda. *Lugd. Bat.*, 1829.
- LEIBNITIUS (God. Guil.), Opp. omnia. 1768.
- LEMONIER (P.), Cursus Philosophicus, ad scholarum usum accommodatus. *Paris*, 1750.
- LEO (Ambrosius), Ambrosii Nolani Castigationes, adversus Averroes. *Ven.*, 1517.
- LETOMUS (Barth.), Summa totius rationis Disserendi. *Colon.*, 1527.
- Idem*, Scholia in dialecticam Georgii Trapezuntii. *Lugd.*, 1545.
- Idem*, Epitome Commentar. Agricolæ. *Colon.*, 1533.
- LEVER (Richard), the Art of Reason, rightly termed *Witcraft*, teaching a perfect way to argue and dispute. *London*, 1573.
- LEWES (G. C.), An Examination of some passages in Dr Whately's Elements of Logic. *Oxford*, 1829.
- LIBAVIUS (Andr.), Collatio dialectices Melanthonis et Rami. *Norimb.*, 1593.
- LIEBAERT (M.), Tractatus de Logica. 1818.
- LIKAWETZ (J. C.), Elementa Philos. *Græcii*, 1820.

- LIPSIUS (J.), *Manuductio ad Stoic. Philos.* *Paris*, 1604.
 LISTRIUS (Gerd.), *Commentarium in Dialecticam Petri Hispani.* 1520.
 LOEWE (J. H.), *Ueber den Begriff der Logik.* *Wien*, 1848.
 LOFTUS (Dudley), *Logica Armeniaca.* *Dublin*, 1657.
 LOSSIUS (Joh. Chr.), *Unterricht der Gesunden Vernunft.* *Gotha*, 1777.
 Idem, *De arte obstetrica Socratis.* *Erfurt.*, 1785.
 LOTT, *Zur Logik.* 1846.
 LUDLAM (Rev. Will.), *Essays Logical.* *Lond.*, 1809.
 LUDOVICUS (de Lemos), *Paradox. Dialectorum.*
 LUSHINGTON (Thomas), *Logica Analytica.* *Lond.*, 1650.

M

- MAASS (J. G.), *Grundriss der Logik.* *Halle*, 1793.
 MACKENSEN (W.), *Grundriss zu einer Theorie des Abstractions vermoe-
 gens.* *Halle*, 1799.
 MACKENSEUS (Geo.), *De humanæ rationis imbecillitate.* *Ultraj.*, 1690.
 MACKENZIE (Sir James), *Reason, an Essay.* *London*, 1675.
 MADRITANUS (P.), *Dialectica seu Logica Minor.* *Romæ*, 1711.
 MAILHAT (Raymond) *Summa Philosophiæ.* *Colon.*, 1660.
 MAIMON (Salom.), *Versuch einer neuen Logik oder Theorie des Denkens.*
 Berlin, 1792.
 Idem, *Die Kategorien des Aristotelis.* *Berl.*, 1798.
 Idem, *Kritische Untersuchungen ueber den menschlichen Geist.* *Leipz.*,
 1787.
 MAJER (G. F.), *Vernunftlehre.* *Halle*, 1752.
 MAJOR (John), *Logicos et Magistrum.* *Lyons*, 1514.
 MAJORAGIUS, *Reprehensiones contra Nizolium.* 1570.
 Idem, *Explanationes in Aristotelis Rhetoricam.* 1572.
 MAKUS (P.), *Compend. Logicæ Institutio.* *Vindobonæ*, 1760.
 MALEBRANCHE (Nic.), *De la Recherche de la Vérité.* *Ed. Paris*, 1712.
 MAMIANI (Terenzio), *Dell' Ontologia del Metodo.* *Parigi*, 1841.
 MANDERSTON (Guil.), *Tripartitum epitoma in totius dialecticæ artis
 principia.* *Paris*, 1517.
 MANGOLD (J. M.), *Philosophia rationalis.* *Ingolst.*, 1755.
 MANSEL (H. L.), *Artis Logicæ Rudimenta, from the text of Aldrich.*
 Oxford, 1849.
 MANSFELT (Reg.), *Elementa rectæ ratiocinationis.* *Ultraj.*, 1668.
 MARCUS (de los Huertos), *Quæst. Dialecticum.*
 MARIOTTE, *Essai de Logique.* *Paris*, 1678.
 MARIUS (Nizolius), *Antibarbarus.* *Parmæ*, 1553.
 MARSAIS (C. C.), *Logic.* *Paris*, 1762.
 MARSAIS (Du), *Logique et principes de grammaire.* *Paris*, 1769.
 Idem, *Essais sur les préjugés. ou de l'influence de l'opinion sur le
 bonheur des hommes.* *Paris*, 1822.
 MARSH (Narciss.), *Manuductio ad Logicam.* *Oxon.*, 1678.
 Idem, *Instit. Logicæ.* *Dublin*, 1681.

- MARTIANUS (Capelle), Probate et sincere latinitatis auctoris Dialectica, perutilis ac jucunda omnibus iis qui, spretis barbaricis deviis, rectum dialectices querunt iter. M. Tullii Ciceronis Topica. *Lyptzh.*, 1510.
- MARTINET (Carol.), Logica seu ars cogitandi ad publicum scholarum usum. *Paris*, 1771.
- MARTINEZ (Joannes), In Aristo.
- MARTINEZ (Joannes Gonzalez), In Aristo.
- MARTINUS (Corn.), Disputatio contra Ramistas de subjecto et fine logicæ. *Lemgov.*, 1597.
- Idem*, Commentarii logici adv. Ramistas. *Helmst.*, 1623.
- MARTINUS (Perez), In Univer. Porphy.
- MARTINUS (de Santolaria), Dialectica.
- MASSA (N.), Logica. *Venet.*, 1559.
- MASSIAS (le Baron), Rapport de la nature à l'homme. *Paris*, 1821.
- Idem*, Problème de l'esprit humain. *Paris*, 1825.
- MATTHLE (Aug.), Lehrbuch für der ersten Unterricht in der philosophie. *Leipz.*, 1823.
- MATTHISIUS (Ger.), Scholia in organon Aristotelis. *Colon.*, 1565.
- Idem*, Epitome logicæ Aristotelicæ, gr.-lat. *Colon.*, 1569.
- MATHEUS (Doniensis Ormazius), Instru. Instrumentorum.
- MAUGRAS, Cours de philosophie. *Paris*, 1822.
- MAUTERNUS (Jo.), Pannonius, rect. schol. Cassov., tabellæ logicæ. *Leutschovia*, 1640.
- MAZEAS (J. M.), Institutiones philosophicæ seu elementa logicæ et metaphysicæ. *Paris*, 1777.
- MAZZARELLI, Il buon uso della logica in materia di religione. *Foligno*, 1787.
- MEHMEL (G. C. A.), Versuch einer volstaendigen analytischen Denk-lehre. *Erlangen*, 1803.
- MEILINGER (Fl.), Grundriss der Logik und Metaphysik. *Muenchen*, 1826.
- MEINERS (Christ.), De nominalium ac realium initiis. *Goetting.* T. xi.
- Idem*, Untersuchungen ueber die Denk-und-Willens-kraefte. *Goett.*, 1806.
- MEISLER (W.), Logica. *Vindob.*, 1781.
- MEISTER, Logique à mon usage. *Amst.*, 1772.
- MELANCHTHON (Phil.), Compend. dialectices ratio. *Wittenb.*, 1520.
- Idem*, Dialecticæ. *Paris*, 1522.
- Idem*, Erotematum dialecticæ. *Wittenb.*, 1547.
- MELCHIOR (de Beleago), Logicam.
- MELCHIOR (de Castro), Logica.
- MELLIN (G. S. A.), Encyclopaedische Woerterbuch der kritischen Philos. *Zullichau und Leipz.*, 1797.
- MENDOSA (P. H. de), Disputationes logicæ ac metaphysicæ. *Tolosæ*, 1617.
- MENZIVS (Fr.), Diss. de Socratis methodo docendi non omnino præscribenda. *Lips.*, 1740.
- MERCIER, Logique, ou l'art de penser. *Génève*, 1766.

- MERINERO (Joannes), Logica.
 METOBIUS (Burchardus), Metaphysica et Logica. 1565.
 METZ (Andr.), Institutiones logicæ. *Bamb. et Wirceb.*, 1796.
Idem, Handbuch der Logik. *Bamb. et Wirceb.*, 1802.
Idem, Ueber den Werth der Logik ein Verhaeltnisse zur Metaphysik und Mathematik. *Wurzb.*, 1813.
Idem, De philos. criticorum de logica. *Wirceb.*, 1799.
 MEURISSE (Fr. M.), Systema logicum figuris emblematicis representatum. J. H. Acker. *Struvii*.
 MICHAEL (de Trinitate), Logica.
 MICHAEL (de Villaverde), Logica.
 MILLS, Logic. 1846.
 MILTON (Joh.), Artis logicæ, &c. *London*, 1672.
 MOLINÆUS (P.), Elementa logica. *Paris*, 1609.
 MOBERLY (C. E.), Lectures on Logic. *Oxford*, 1848.
 MONBODDO (Lord), Ancient Metaphysics. 1779.
 MONGIN, Philosophie élémentaire ou méthode analytique. *Nancy*, 1803.
 MONRO, Logic. *Glasgow*, 1850.
 MONSNERIUS (P.), De Methodo Scientiarum. *Lugd.*, 1626.
 MOONEY (Daniel), Veram Logicam, &c. 1812.
 MUELLER (J. F.), Zweifel gegen Herrn Christ. Wolfs vernuenftige Gedanken. *Giesen.*, 1731.
 MUENCH (Jo. Gottl.), Diss. de notione ac indole scepticismi, nominatim Pyrrhonismi. *Altd.*, 1797.
 MURMELLIUS (Joh.), Isagoge in prædicamenta seu categorias Aristotelis. *Paris*, 1535.
 MURNER (R. P. Th.), Chartiludium logicum.
 MURRAY, Logic. *Dublin*, 1812.
 MUSSCHENBROEK (P. van), Institutiones logicæ. *Ludg. Batav.*, 1748.

N

- NAPALTON, Logic. 1793.
 NASON (George), Phil. of Logic. *Lond.*, 1809.
 NAST (J. Jac.), Prog. de methodo Platonis philos. *Stuttg.*, 1787.
 NASTON (John), Introduction to the Art of Logic. *London*, 1671.
 NAVERUS (Jacobus), In Arist.
 NAVERUS (Joannes), Logica.
 NEANDER (C.), Tabulæ in dialecticam Petri Rami. *Francof.*, 1591.
 NEEB (Joh.), System der kritischen Philos. *Bonn und Francof.*, 1795.
 NEHR (Joh. Geor.), Logik. *Nuernberg*, 1797.
 NELDELIUS (Joh.), Institutio de usu organi Aristotelici in disciplinis omnibus. *Helmst.*, 1666.
 NERICIUS (Olaus Nicolai), Logica. 1570.
 NEWTON (John), Introduction to the Art of Logic. *London*, 1671.

- NICEPHORUS BLEMMYDAS, *Epitome logicæ doctrinæ Aristotelis*, Gr. et Lat. 1605.
- NICOLAI CUSANUS, *Opp. Basil*, 1565.
- NICOLAI, Sur les abstractions, les imperfections qui en sont inséparables, et leur fréquent abus. *Mém. de l'Acad. de Berlin*, 1803.
- Idem*, Sur le *regressus* logique et sur l'idée qu'attachaient à ce mot les anciens commentateurs d'Aristote. *Ib.*, 1803.
- NIEUPORT (C. F. de), *Essai sur la théorie du raisonnement. Bruxelles*, 1805.
- NIZOLIUS, *De Veris Principiis et Vera Ratione Philosophandi. Parma*, 1553.
- NOBILIUS (FL.), *Quæstiones logicæ variæ. Amberg*, 1611. 4to.
- NOEL, *Logique de Condillac. Paris*, 1202.
- NOLDIUS (Christ.), *Logica*.
- NOLINUS (Petr.), *Elementa logica. Amst.*, 1638.
- NORDIN (P.), *Theses methodum philosophandi corrigentes. Christianst.*, 1820.
- NOVARIA (Thomas de), *Scientiam Logice, &c. Rome*, 1626.
- NUESSLEIN (Georg.), *Kritik der falschen Ansichten der Logik. Bamb.*, 1803.
- NUESSLEIN (Fr. Ant.), *Begriff und Einteilung der Philosophie, als Einleitung in das Studium derselben. Bamb.*, 1824.
- Idem*, *Grundlinien der Logik. Bamb.*, 1824.
- NUNEZ (Ludovicus), *De Formatione Syllogis*.

O

- OCCAM (Guil.), *Doctoris invincibilis et nominalium parentis, summa totius logicæ. Venet.*, 1532-1598.
- ✓ OLDFIELD, *Essay towards the Improvement of Reason*. 1707.
- OOSTERGA (Cyp. Reg. ab.), *Logica juridica. Ultraj.*, 1638.
- OSTERRIEDER (H.), *Logica critica. Aug. Vind.*, 1760.
- OZELL, *Logic, or the Art of Thinking*. 1716.

P

- PACIUS, *Comm. in Analy. Pr. Francof.*, 1564.
- PAIVA (Hier. de), *Comp. Logices. Lond.*, 1627.
- PALUDANUS (M.), *Dialectica. Antverpiæ*, 1628 et 1636.
- PARDUS (Hier.), *Medulla dialectices. Paris*, 1505. Fol.
- PERIONIUS (J.), *Dialecticæ. Basil*, 1549.
- Idem*, *Epitome dialecticæ. Basil*, 1551.
- PEDROLO (Joannes), *Lecturæ Logicales*.

- PERRARD (J. F.), Introduction à la Philosophie, ou Nouvelle Logique Française. *Paris*, 1844.
- PERRON (F.), Essai d'une Nouvelle Théorie sur les Idées Fondamentales. *Paris*, 1830.
- PETRUS (Barth.), Præceptiones logicæ. *Duaci*, 1625.
- PETRUS ÆGIDIUS, Insti. Dialecticæ.
- PETRUS CIRUELO, Logica.
- PETRUS DE ESPINOSA, In Summulas.
- PETRUS FERMOSELLUS, In Logicam.
- PETRUS FERNANDEZ TORRENJON, In Arist. Dialecticam.
- PETRUS DE FONSECA, Dialectica.
- PETRUS (Hispanus), Logica. *Hisp.*, 1571.
- PETRUS A JESU MARIA, In Logicam.
- PETRUS JOANNES MONZON, Logica.
- PETRUS DE MERCADO, In Logicam.
- PETRUS NUNEZ VELA, Dialectica.
- PETRUS DE ONA, Logica.
- PETRUS DE OVIEDO, Logica.
- PETRUS SIMON ABRIL, Introd. ad Logicam.
- PETTERMAN (Aug.), Philos. Cartesianæ adversus, &c. *Lips.*, 1690.
- PFAFFRADIUS (Casp.), Commentatio de studiis Rameis. *Francof.*
- PHILIPPUS (Guil.), Medulla logicæ. *Lov.*, 1661. 3 vols., 4to.
- Idem*, Logica. *Lov.*, 1658.
- PHILOPONUS (Joh.), Comment. in analyt. prima. Græce. *Venet.*, 1536.
- Idem*, Comment. in analytica posteriora. Gr. *Venet.*, 1534.
- PHOCYLIDES (John H.), Logica. *Franc.*, 1643.
- PINK (Rob.), Quæs. Selec. in Logicam. *Oxon*, 1680.
- PINNOCK, Logic. *London*, 1840.
- PLATNER (Ern.), Philosophische Aphorismen. *Leipz.*, 1776. 2 vols.
- Idem*, Lehrbuch der Logik und Metaphysik. *Leipz.*, 1795.
- POLOUQUET (Gottf.), Methodus demonstrandi directe omnes syllogismorum species. *Tuebing.*, 1763.
- Idem*, Principia de substantiis et phenomenis. Accedit methodus calculandi in logicis. *Tuebing.*, 1773.
- POELITZ (K. H. L.), Elementar-Logik. *Dresden und Leipz.*, 1802.
- POGGI (T. F.), Lezioni d'Ideologia, di Grammatica, di Logica. *Firenze*, 1842.
- POLANUS (A.), Syntagma Logicum. *Basle*, 1605.
- POLI (B.), Corso de Filosofia. *Milano*, 1828.
- POMELLUS (Alex.), Methodus syllogistica. *Venet.*, 1572. 4to.
- PORPHYRIUS, In categorias Aristotelis expositio; Græce. *Paris*, 1543.
- PRISCIANUS (Theod.), Logicus. *Basle*, 1532.
- PSELLI (Mich.), Introductio in sex philos. modos; Græce. *Venet.*, 1532.
- Idem*, Compendium in quinque voces Porphyrii et Aristotelis prædicamenta. Græce. *Paris*, 1541.
- Idem*, Paraphrasis libri Aristotelis de interprete; Gr. cum Ammonii et Magentini comment. *Venet.*, 1503.

- PSELLI (Mich.), Synopsis logicæ Aristotelis; Gr. et Lat. *Aug. Vind.*, 1600.
 POLYANDER (Johan.), Theses Logicæ. 1602.

R

- RADACUS (Phil.), Disputatio pneumatica de errore. *Traj. ad R.*, 1720.
 RAMBACH (J. T. F.), Pract. Vernunftlehre. *Marb.*, 1795.
 RAMUS (Petr.), Institutiones dialecticæ. *Paris*, 1543.
 Idem, Dialectica. *Colon.*, 1572.
 Idem, Animadversiones in dialecticam Aristotelis. *Paris*, 1543.
 Idem, Scholæ in artes liberales. *Basil*, 1569.
 Idem, Opp. elegantioris methodi philosophiæ, studiosis pernecessariæ.
 Basil, 1584.
 RATHE (P.), Instit. Logicæ. 1721.
 RATTIER, Logique. *Paris*, 1840.
 RAYMUNDUS LULLIUS, Opera t. X. *Moguntia*, 1721 et 1742.
 Idem, Opera ea quæ ad inventam ab ipso artem universalem, &c.
 Argentor., 1609.
 RECENNIUS (John P.), Parva Logica. 1605.
 REGIS (P. Sylvain), Système de la philosophie, contenant la logique,
 &c. *Paris*, 1690. 3 vols. 4to.
 REGIUS (Joh. D.), Comm. Logici. 1603.
 REGNAULT (le P.), Logique en forme d'entretiens, ou l'art de trouver la
 vérité. *Paris*, 1746.
 REID (Dr), Works. 1780.
 REIFFENBERG (Baron), Logique. *Bruxelles*, 1839.
 REIMARUS (Herm. Sam.), Vernunftlehre als eine Anweisung zum rich-
 tigen Gebrauch, &c. *Hamb. und Kiel*, 1756.
 REIMMANUS (Jac. Frid.), Critiserender Geschichts-Calender von der
 Logica. *Francof.*, 1698.
 REINHOLD (K. L.), Versuch einer neuen Theorie des menschlichen Vor-
 stellungsvermögens. *Prag und Jena*, 1789.
 Idem, Ueber das Fundamente der philos. Wissensch. *Jena*, 1791.
 Idem, Versuch einer kritik der Logik. 1806.
 Idem, Die alte Frage, Was ist die Wahrheit? *Altona*, 1820.
 REINHOLD (Ernst), Begründung und neue Darstellung der logischen
 Formen. *Leipz.*, 1819.
 REISCH (Geor.), Rhetorica et Logica. *Basil*, 1508.
 RENNEMANNUS (Herm.), Enodatio totius philosophiæ Rameæ. *Francof.*,
 1599.
 REUSCH (J. P.), Via ad perfectionem intellectûs compendiaria. *Isenaci*,
 1728.
 Idem, Systema logicum. *Jenæ*, 1734.
 REUSS (Matern.), Logica universalis. *Wirceb.*, 1789.
 Idem, Vorlesungen ueber die theoretische und practische Philosophie.
 1797.
 Idem, Initia philosophiæ solidioris, initia Logicæ. *Salzburgi*, 1798.

- REYNEAU (Charles R.), *Logic*.
 RICHTER (K. A.), *Logik*. *Wien*, 1800.
 RINGELBERGIUS (Jo.), *Dialectica et Rhetorica*. *Antv.*, 1529.
Idem, *De disputatione inter disputantes dialectice instituenda libellus*.
Lov., 1551.
 RITIUS (J. A.), *Object. et Anno. super Logicam Pauli Veneti*. *Bonn*,
 1517.
 RITTER (Hein.), *Vorlesungen zur Einleitung in die Logik*. *Berl.*, 1823.
Idem, *Abriss der philosophischen Logik*. *Berl.*, 1824.
 RIVIVS (Jo.), *Dialecticæ*. *Lov.*, 1546.
 RIXNER (Thad. Ans.), *Aphorismen der gesammten Philos.* *Sulzbach*,
 1818.
 ROCHOW (F. Ehb. V.), *Kleine Logik fuer Frauenzimmer*. *Braunschweig*,
 1789.
 RODERICUS SINETUS, *Dialectica*.
 RODOLPHUS (C.), *Dialectica*. *Moguntia*, 1548.
 RODRIGUEZ (Ludovicus), *Dialectica*.
 ROESER (Columb.), *Institutiones Logicæ*. *Wirceb.*, 1775.
 ROMAGNOSUS (J. D.), *Che cosa è la mente sana? Indovinello massimo*
che potrebbe valere poco o niente. *Milano*, 1827.
 ROSENKRENTZ, *Modifications de Logique*. 1846.
 ROTHUIS (E. R.), *Logica practica adjecta Logicæ Paulinæ*. *Ulma*, 1772.
 RUBUS (Joah.), *Logices Aristotelicæ*. 1572.
 RUDBECKIUS (J.), *Elemen. Logicæ*. 1580.
 RUEDIGER (J. A.), *Disp. de eo quod omnes ideæ oriantur a sensione*.
Lips., 1704.
Idem, *De sensu veri et falsi, lib. IV*. *Halæ*, 1709.
Idem, *De usu et abusu terminorum, de novis ratiocinandi adminiculis*.
 RUTHERFORD (John), *Commentarium de Arte Disserendi*. *Edinburgh*,
 1577.
 RYDELIUS (And.), *Compendium Logices*. 1690.

S

- SACCHERUS (P.), *Logica demonstrativa*. *Aug. Ubior.*, 1735.
 SALAT (J.), *Grundzuege der allg. Philos.* *Muench.*, 1820.
Idem, *Vernunft und Verstand*. *Tuebing.*, 1808. 2 vols.
 SANCIVS CARRANZA, *Logicolia*.
 SANDERSON (Bishop), *Logicæ*. *Oxon*, 1841.
 SARIA (J. G.), *De Rationali Philosophia Institutiones*. 1780.
 SAURE, *Elémens de Logique, à l'usage des gens du monde*. *Paris*, 1794.
 SAXONIA (Alb. de), *Sophismata*. 4to.
 SCARELLA (J. B.), *Elementa Logica*. 1762.
 SCAYNUS, *Paraphrasis in Organum*. 1569.
 SCHAD (J. B.), *Neuer Grundriss der Logik*. *Coburg*, 1801.
Idem, *Institut. philos. universæ, t. I., Logicam compl.* *Charkow*, 1815.

- SCHARFIUS (J.), *Manuale Logicum*. *Wittenb.*, 1635.
- SCHAUMANN (J. Ch. Gl.), *Elemente der allg. Logik*. *Marb.*, 1795.
- SCHEGKIUS (Jac.), *Responsio ad quatuor epistolas P. Rami contra se editas*. *Tuebing.*, 1570.—*Rami defensio adv. Schegkium*. *Lausan.*, 1517.
- SCHEIBLER (Chris.), *Logica, Metaphysica, &c.* *Oxon.*, 1657.
- SCHERBIUS (Phil.), *Dissertatio pro philos. peripat. adversus Ramistas*. *Giessen*, 1610.
- SCHERFER (Car.), *Institutiones Logicæ*. *Viennæ*, 1753.
- SCHIEKHARDUS (M.), *Logica juridica*. *Herb. Nass.*, 1615.
- SCHMIDT-PHISELDEK (C. F. de), *Philosophiæ criticæ*. *Alton.*, 1796. 2 vols.
- SCHMIDT (K. Chr.), *Grundriss der Logik*. *Jena*, 1797.
- SCHOOKIUS (Martinus), *Philosophia Carthesiana, sive admiranda methodus novæ philosophiæ Renati Descartes*. 1643. *Collegium Logicum*. 1658.
- SCHOPENHAUER (Arthur), *Die Welt als Wille und Vorstellung, vier Buecher nebst einem Anhang, der die Kritik der Kant'sche Philos. enthaelt*. *Leipz.*, 1819.
- SCHOTANUS (Jo.), *Discussio censuræ Huetianæ, cum præfatione Jacobi Romani*. *Amstel.*, 1702.
- SCHULZE (G. E.), *Grundsætze der allg. Logik*. *Helmst.*, 1802.
Idem, *Kritik der theoretischen Philosophie*. *Hamb.*, 1802.
Idem, *Ænesidemus, oder ueber die Fundamente, der von Reinhold gelieferten Elementar-Philosophie*. *Helmst.*, 1792.
Idem, *Encyclopædie der Philos. Wissenschaften*. *Goett.*, 1818.
- SCHUTZ (C. G.), *Grundsætze der Kunst zu Denken*. 1773.
- SCOTT (R. E.), *Principles of a Rational Logic*. *Lond.*, 1806.
- SCOTT (Sir Michael), *Commentarius in Aristot.* *Venice*, 1496.
- SCRIBONIUS (G. A.), *Triumphus Logicæ Rameæ*. *Basil*, 1583.
- SEBASTIANUS COUTO, *Logica*.
- SEBASTIANUS FOXIUS MARZILLO, *Dialectica*.
- SEBASTIANUS IZQUIERDO, *Dialectica*.
- SEBASTIANUS DE SOTO, *Summula*.
- SEGUY (Ant.), *Philos. ad usum schol. accommod. Logica*. *Paris*, 1762.
- SELS (H.), *Initia Logicæ. Confluent*. 1778.
- SEMLER (C. A.), *Versuch über die combinatorische Methode, ein Beitrag zur angewandten Logik und Allgem. Methodik*. *Dresden*, 1811.
- SERRANO (Johannes), *Dialectica*.
- SEXTUS EMPIRICUS, *Pyrrhoniæ hypoth. ed Fabricio*. *Lips.*, 1718.
- SIBBERN (Fred. C.), *Logik als Denklehre*. *Copenhagen*, 1835.
- SIEVERS (G. J.), *De methodo Socratica*. *Slesv.*, 1810.
- SIGWART (H. C. W.), *Handbuch zu Vorlesungen ueber die Logik*. *Tuebing.*, 1818.
- SIMEON (Rabbi), *Logica*. *Basil*, 1527.
- SIMONIUS, *Varia in Aristotelem scripta*. *Genev.*, 1567.

- SIMPLICIUS, Comment. in Aristotelis categorias, Gr. *Venet.*, 1499.
- SMIGLECIUS (M. Soc.), Logica. *Oxon*, 1638.
- SMITH (P.), Grammar, Criticism, and Logic.
- SMITH (Samuel), Aditus ad Logicam. *Oxon*, 1658.
- SNELL (F. W. D.), Erste Grundlinein der Logik. *Giesen*, 1804.
- SNELL (Ch. W. und F. W.), Logik und Metaphysik. *Giesen*, 1804.
- SNELL (F. W. D.), Leerboek voor het eerste onderwijs in de wysbegeerte, uit het hoogduitsch vertaald door A. J. Aitzema. *Winschoten*, 1821.
- SNELL (Rodolph), De Praxi Logica. 1595.
- Idem*, Comment. in dialecticam Rami. *Herborn*, 1597.
- Idem*, Prælectiones in Rami dialecticam. *Francof.*, 1596.
- SOAVE (F.), Instituzioni di Logica, Metafisica, ed Ethica. *Milan*, 1831.
- SOLY, Logic. *Cambridge*, 1844.
- SOTO (Dom.), Summulæ logicæ et physicæ. *Salmantica*, 1547.
- SPALDING (J. L.), Vindiciæ philosophorum Megaricorum. *Berol.*, 1795.
- SPENCER (Thomas), Arte of Logic. *Lond.*, 1628.
- SPIEGHEL, Ruylgh bewerp van de redenkaveling ofte nederduytsche dialectike. *Amst.*, 1585.
- SPINOZA (Bened. de), Opp. quæ supersunt, ed E. H. E. G. Paulus. *Jenæ*, 1802.
- SPRUYT (M. H.), Introduction à la dialectique légale. *Bruxelles*, 1814.
- SPUMBERGER (J. C.), Oratio de præstantia et utilitate artis dialecticæ. *Wittemb.*, 1598.
- STAHLIUS (Dan.), Institutiones Logicæ. *Jenæ*, 1662.
- STATTLER (Bened. J. S.), Philosophia methodo scientiis propria explanata, t. I. Logica. *Aug. Vind.*, 1769–1772.
- STEELE (Sir R.), Grammar, Logic, &c. *London*, 1728.
- STEINBART (G. S.), Gemeinnuetzige Anleitung des Verstandes zum regelmässigen Selbstdenken. Dritten Aufl. *Zullichau*, 1793.
- STENGELIUS (G.), Libellus de bono et malo syllogismo. 1623.
- STERNE (Richard), Summa Logicæ. *Lond.*, 1685.
- STIERIUS (J.), Præcepta logicæ peripateticæ. *S. L.*, 1632. 4to.
- STIERIUS, Præcepta Doc. Logicæ, 1689.
- STOEGER (B.), Introd. in studium philos. theor. P. 1, Logica. *S. a.*
- STÖRCHENAU (S. von.), Institut. Logicæ. *Ofenb.*, 1795.
- STRAUSS (K. G.), Lehrbuch einer system. Logik. *Berlin*, 1783.
- STROKIRCH (M. Van), Logica, eller Stutkonsten, &c. *Stockholm*, 1721.
- STURMIUS (J.), Disputationes logicæ pro veritate et Aristotele conceptæ. *Gryphisw.*, 1643.
- Idem*, Partitionem dialecticarum, lib. IV. *Argent.*, 1560.
- SYREBIUS (Jo. Jac.), Institutiones philos. rationalis eclecticæ una cum historia logices. *Jenæ*, 1717.

T

- TALÆUS, P. Rami dialectica Andom. *Colon.*, 1578.
- TANDEL (E.), Cours de Logique. *Louvain*, 1841.
- TAPPAN (Henry P.), Elements of Logic. *New York*, 1844.
- TARTARETTUS (Petr.), In summulas Patri Hispani, in Isagogen Porphyrii et Aristotelis logicam. *Venet.*, 1592.
- TATHAM, Chart and Scale of Truth.
- TERRASON (Abbé), La Philosophie de l'esprit. *Paris*, 1770.
- TERRY (John), Theological Logic. *Oxon*, 1600.
- TETENS (J. M.), Philosophische Versuch ueber die menschliche Natur, ihre Entwicklung. *Leipz.*, 1777.
- THANNER (Ignat.), Handbuch der Vorbereitung und Einleitung zum selbstaendigen wissenschaftlichen Studium, besonders der Philos. I Th., die Denklehre. *Muenchen*, 1807.
- THEMISTIUS, Paraphrases in Arist. analyt. post., physica de anima, de memoria et reminiscencia, Gr. ed. Trincavelus. *Venet.*, 1534.
- THIEBAULT (Dieudonné), Grammaire philosophique, ou la métaphysique, la logique en un seul corps de doctrine. *Paris*, 1802. 2 vols.
- THOMAS CORREA, Logica.
- THOMAS DE MERCADO, Dialectica.
- THOMASIVS (Chr.), Introductio in philosophiam aulicam. *Lips.*, 1688; *Halæ*, 1702.
- Idem*, Introd. in philos. rationalem, &c. *Lips.*, 1601.
- Idem*, Einleitung zu der Vernunftlehre. *Hal.*, 1691.
- Idem*, Ausuebung der Vernunftlehre. *Hal.*, 1710.
- THOMASIVS (Jac.), Logica. *Lips.*, 1692.
- THOMASIVS (Joh.), De secta nominalium orat. *Lips.*, 1683.
- THOMPSON (Rev. William), Outlines on the Laws of Thought. *London*, 1842.
- THEUMMIG (Lud. Ph.), Institutiones philos. *Francof.*, 1725.
- THYNNE, Logic.
- TIARA (Petreius), Sophisten Platonis, sive, de eo quod verè esse dicitur. *Lovaini*, 1552.
- TIEFTRUNK (J. H.), Grundriss der Logik. *Halle*, 1801.
- TITELMANNUS (Fr.), Summa Aristotelici organi cum scholasticis collati. *Paris*, 1545.
- TITIVS (J. G.), Ars cogitandi. *Lips.*, 1702.
- TITTEL (G. A.), Erläuterungen der theoretischen und pract. Philos. nach Feders ordnung.—Logik. *Francof.*, 1783.
- Idem*, Kantsche Denkformen oder Kategorien. *Francof.*, 1786.
- TITTMANN (J. A. H.), Grundriss eines Elementarlogik, &c. *Leipsic*, 1785.
- TOELLNER (A. G.), Baumgarten's acroasis logica aucta. 1765.
- TRENDELENBERG (F. A.), Elementa Logices Aristot. *Berol.*, 1845.
- TRESCHOW (Niels), Logik. *Copenhagen*, 1813.

- TRIEU (Ph. du), *Manuductio ad logicam.* *Luxemburg*, 1690.
 TREUTLER (Hier.), *Rudimenta dialecticæ P. Rami.* *Herborn*, 1589.
 TRUE (Charles K.), *Elements of Logic.* *Boston, U. S.*, 1840.
 TSCHIRNHAUSEN, *Medicina mentis sive artis inveniendi præcepta generalia.* *Amst.*, 1687.
 TULLY (Thomas), *Logica.* *Oxon*, 1662.
 TWESTEN (A. D. Ch.), *Die Logik, insbesondere die Analytik.* *Schieswig*, 1825.
 TYRWITT (Thomas), *Solid Reasons for Philosophizing.* *Winchester*, 1652.

U

- UBAGHS (G. C.), *Précis de Logique Élémentaire.* *Louvain*, 1838.
 ULRICH (J. A. H.), *Institutiones logicæ et metaphysicæ.* *Jenæ*, 1785.

V

- VALERIUS (C.), *Dialectica.* *Antv.*, 1575.
 VALLA (Laur.), *De dialectica, lib. III.* *Venet.*, 1499.
Idem, *Nicephori compendiaria de arte disserendi ratio.* *Basil*, 1542.
 VALLIUS (Paulus), *Logica.* *Lugd.*, 1622. Fol.
 VELSIUS (Justus), ou WELSENS, *Disputatio de universalibus.*
Idem, *Tabulæ in Aristotelis topica.*
 VENTURA (G.), *De Methodo Philosophandi.* 1828.
 VEROMANDUUS, *Institutionum dialecticarum lib. III.* *Paris*, 1554. 4to.
 VERRI (Pietro), *Di Logica.* *Bolog.*, 1760.
 VERNEY (L. Ant.), *Logica.* 1750.
 VICO, *Scienza Nuova.* 1720.
 VILLAUME (P.), *Practische Logik.* *Berlin und Libau*, 1787.
Idem, *Populaere Logik zur Einleitung in die Schulwissenschaft.*
Hamb. und Mainz, 1805.
 VINCENTIUS JUSTINIANUS, *In Logicam.*
 VINCENTIUS MONTANUS, *In Logicam.*
 VIOTTUS (Barthol.), *De demonstratione, lib. V.* *Paris*, 1560.
 VIVES (Joannes Ludovicus), *In Dialecticos.*
 VIVES (Lud.), *Opp.* *Basil*, 1555.
Idem, *De disputatione.*
Idem, *Anfuhrung zu der Weisheit. (trad.)* *Wolffenb.*, 1656.
 VLADERACCUS (Christ.), *Epitome dialectices Hunnæi.* *Sylvæ Ducis*, 1590.
 VOSSIUS (J. G.), *De logices et rhetoricæ natura et constitutione, lib. II.*
Hagæ, 1658. 4to.

W

- WAGNER (L. H.), Grundriss der reinen und allg. Logik. *Hof.*, 1806.
- WALCH (J. G.), Einleitung in die Philos. *Leipz.*, 1727.
- Idem*, Philos. Lexikon. *Leipz.*, 1726 and 1775.
- WALCH (J. J.), Commentatio de philosophiis veterum criticis.
- WALCHIUS (J. Gottl.), Novum logicæ systema. *Jenæ*, 1766.
- WALKER (J.), Familiar Commentary on Logic. *London*.
- WALL, Practical Logic. 1838.
- WALLARIUS (N.), Compen. Logicæ Institut. 1706.
- WANDELINCOURT (Hubert), Cours d'éducation pour les écoles du second âge, t. I., la Logique du second âge, ou l'art de bien diriger les idées. *Paris*, 1801.
- WATTS (Isaac), Logic. *Lond.*, 1736.
- Idem*, Supplement to his treatise of Logic, &c. 1741.
- WEBER (Jos.), Logica in usum eorum qui eidem student edita. *Landshuti*, 1799.
- WEISE (F. C.), Architectonik aller menschlichen Erkenntnisse. *Heidelb.*, 1820. Fol.
- WEISENS (Christ.), Curieuse Fragen ueber die Logica. *Leipz.*, 1676.
- WEISHAUP (A.), Ueber die Gruende und die Gewiszheit der menschl. Erkenntniss, zur pruefung von Kant's Kritik der reinen Vernunft. *Nurenb.*, 1788.
- WEISS (Chr.), Lehrbuch der Logik. *Leipz.*, 1801.
- WENDEL (J. A.), Skeptische Logik. *Coburg und Leipz.*, 1819.
- WENDELINUS (M. F.), Logicæ institutiones. *Amst.*, 1640.
- Idem*, Insti. Logicæ. *Amst.*, 1654.
- WENZEL (G. J.), Canonik der Verstandes und der Vernunft. ein Commentar ueber Kant's Logik. 1810.
- WERENFELS (S.), De logomachiis eruditorum. *Amst.*, 1716.
- WHATELY, Logic. 1842.
- WIEDEBURG (Fr. Aug.), Ueber die practische Logik. *Helmst.*, 1789.
- WILD (J. C. D.), Logik und allg. Encyclop. *Goett.*, 1802.
- WILLIS (Profess.), Institutio Logicæ. *Oxon*, 1715.
- WILSON (Sir Thomas), Art of Logic. *London*, 1580.
- WITTENBACHIUS, Præcepta Philos. Logicæ. 1823.
- WITTICHIUS (Chr.), Anti-Spinozo. *Amst.*, 1690.
- WOLF (Chr.), Vernuenftige Gedenken von den Kraeften des menschlichen Verstandes. *Halle*, 1710.
- Idem*, Philosophia rationalis sive logica methodo scientifica pertractata. *Francof. et Lips.*, 1728. 4to.
- Idem*, Philosophia Wolfiani contracta logicam, &c. *Halæ*, 1744, 1745. 2 vols. 4to.
- Idem*, Logique, ou réflexions sur les forces de l'entendement humain.
- WOETZEL (J. K.), Versuch der einzig zweckmaessigen Prapaedeutik der Vernunftlehre oder Logik, &c. *Leipz.*, 1802.
- WOTTON (Samuel), The Art of Logic. *Lond.*, 1626.

- WOTTON (Antony), Logic of Peter Ramus. *London*, 1626.
 WYNPERSSE (Dion. van de), Institutiones logicæ. *Groningæ*, 1767;
Lugd. Bat., 1779.
 WYSSIUS (Casp.), Logica. *Genevæ*, 1609.
 WYTTEBACH (Dan.), Præcepta philosophiæ logicæ. *Amst.*, 1781.

X

- XYLANDER (Will.), Instit. Aph. Logicæ. *Heidelb.*, 1577.

Y

- YZENDOORN (Gisb. ab), Compendium logicæ peripateticæ. 1640.
Idem, Logica peripatetica. 1645. 4to.

Z

- ZABARELLA (Jacob), Opera logica. *Basil*, 1594; *Colon.*, 1597. 4to.
Idem, Tabulæ logicæ. *Patavii*, 1580. Fol.
 ZEIDLERUS, Introductio in Aristot. *Gothæ*, 1684.
Idem, De modo solvendi sophismata. *Rudolst.*, 1679.
 ZEISOLDUS (J.), Collegium logicum. *Jenæ*, 1660.

ANONYMOUS.

- A Familiar Commentary on Logic. *Oxford*, 1793.
 A Key to Questions on Aldrich's Logic. *Oxford*, 1829.
 A Philosophical Discourse of Speech, conformable to the Cartesian Principles. *London*, 1668.
 A Rational Introduction to Bentham's Logic. *Oxford*, 1773.
 Ars Rationis, videlicet Logica, ad mentem nominalium. *Oxon*, 1673.
 Ars Sciendi sive Logica. By T. G. *London*, 1681.
 Artis argumentandi principia, in usum stud. juvent. concinnata. *Lugd. Batav.*, 1741.
 Artis Logicæ Rudimenta. *Oxon*, 1837.
 Commentaria in quatuor libros novæ logicæ secundum processus bursæ Laurentianæ Coloniensis ubi doctrina Alberti magni, &c. *Colon.*, 1494. Fol.
 De Logica. *Madrid*, 1563.

- Dialogus de dialectica Aristotelis a Melancthone et Ramo exposita. *Francof.*, 1600.
- Easy Lessons on Reasoning. *London*, 1847.
- Elementa Logicæ. 1795.
- Eléments de Logique. *Bruxelles*, 1817.
- Essai sur les préjugés, où l'on traite principalement de la nature et de l'influence des préjugés philos. *Neuchâtel*, 1796. (Attrib. to J. TREMBLEY, Genevese.)
- Essai sur la psychologie, comprenant la théorie du raisonnement et du langage, l'ontologie, l'esthétique, et la dicéosyne. *Paris*, 1826.
- Excerpta ex Aristotelis Organon. *Oxford*, 1802.
- Grammatica rationis, sive institutiones logicæ. *Oxonis*, 1685.
- Institutio logicæ ad communes usus accommodata. 1687. Fol.
- Institutiones philosophicæ in novam methodum digestæ. *Antissiodori*, 1761. 3 vols. 12mo.
- Institutionum philos. cursus, ad usum stud. juv. præsertimque seminariorum accommodatus. *Paris*, 1818.
- Introduction to Logic. *Oxford*, 1830.
- Lectures on Locke; or, The Principles of Logic. *London*, 1840.
- Logic by Question and Answer. *London*, 1790.
- Logic, or the Key of Sciences. 1692.
- Logica, sive ars Cogitandi. Adjectæ sunt adnotationes logicæ. *Ultraj.*, 1707.
- Logica, pars prima Philos. ad usum seminarii Leodiensis. *Leod.*, 1816. et 1817.
- Logica, sive ars Cogitand. *Lug. Bat.*, 1682, 1694, et 1702. *Amst.*, 1736.
- Logica, sive ars Cogitandi; adj. sunt adnot. logicæ. *Traj. ad R.*, 1707.
- Logicæ; sive ars Cogitandi, e Gallica in Latinum sermonem versa. 1674.
- Political Logic. *Lond.*, 1773.
- Prolegomena zur Analysis in der Philos. *Gotha*, 1804.
- Questions on Aldrich's Logic. *Oxford*, 1829.
- Specimen artis ratiocinandi naturalis et artificialis ad Pantosophiæ principia manuducens. *Hamb.*, 1684.
- Systema logicæ Dantiscanæ. *Hanov.*, 1618.
- Système de Logique. *Lausanne*, 1735.
- Tractatus de logica in schol. philos. Lovanii dictata. *Lovanii*, 1817.
- Wit, Interpreter, or New Logic. 1655.



